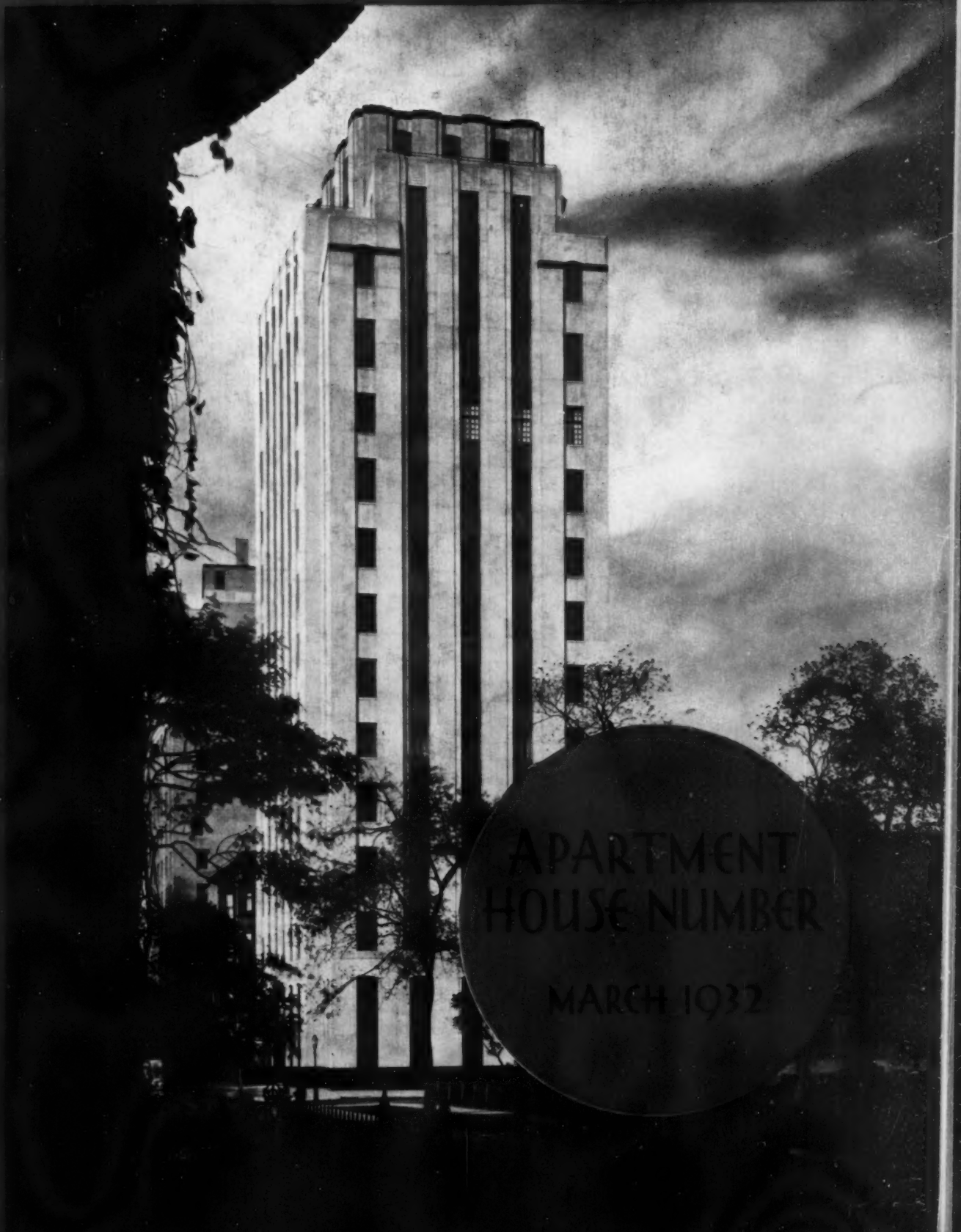


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THE ARCHITECTURAL RECORD



APARTMENT
HOUSE NUMBER

MARCH 1932

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Magoba Const. Co., *Builder*

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VOL. 71 NO. 3

MARCH, 1932

Cover:	1301 ASTOR STREET APARTMENTS, CHICAGO, ILLINOIS Philip B. Maher, Architect Photograph by Hedrich-Blessing
Frontispiece:	VAN TASSEL APARTMENTS AT NORTH TARRYTOWN, NEW YORK Andrew J. Thomas, Architect
147-150 . . .	HOW CAN APARTMENT FACILITIES BE PROVIDED FOR THE LOWER-INCOME GROUPS? By Henry Wright, Architect and Town Planner
151-156 . . .	LOW RENTAL DWELLINGS—How Can Construction and Service Costs of Apartment Buildings Be Reduced?
157-163 . . .	REDUCING APARTMENT COSTS BY ECONOMY OF (1) PLAN- NING, (2) CONSTRUCTION, (3) OPERATION By Eugene H. Klaber, Architect
164, 165 . . .	CHRONOLOGY OF DEVELOPMENT OF GARDEN APARTMENTS AND GROUP ROW HOUSES
166 . . .	HOW LARGE-SCALE HOUSING PROJECTS ARE DEVELOPED
167-198 . . .	PORTFOLIO OF APARTMENT HOUSES Apartments by Ernest Flagg; Springsteen and Goldhammer; Andrew J. Thomas; Bley and Lyman; Houlihan, Hauser and Marks; Sukert and Cordner; R. C. Reamer; Philip B. Maher; Holabird and Root; Garber and Woodward; George Fred Keck; Thielbar and Fugard; Edward B. Green and Son; Albert Hart Hopkins; Irwin S. Chanin; Boris W. Dorfman; Howe and Lescaze; Clauss and Daub; Architects.
199-208 . . .	PRIZE-WINNING APARTMENTS IN NEW YORK—PLATES Apartments by Charles A. Platt; Clarence S. Stein; Andrew J. Thomas; Roger H. Bullard; Philip L. Goodwin; Kenneth Franzheim; Bottomley, Wagner and White; Th. Engelhardt; Architects.
209-211 . . .	COLORS TO RELIEVE EYE STRAIN IN THE SURGICAL OPERATING THEATER By J. Eastman Sheehan, M.D., Professor of Plastic Surgery, Post- Graduate Medical School, Columbia University
211, 212 . . . 46 (adv.)	THE NEED FOR A NEW HOUSING ECONOMY By L. Seth Schnitman
213-216 . . . 44 (adv.)	TECHNICAL NEWS AND RESEARCH: COMPARATIVE COST STUDIES OF NEW GROUP DWELLINGS— Addenda of Cost Data Used in Determining New Housing for the Reconstruction of Slums By Henry Wright
37, 38 (adv.)	ARCHITECTS' ANNOUNCEMENTS AND CALENDAR—THE APRIL ISSUE
48 (adv.)	QUESTIONS AND ANSWERS
50, 52, 55, 56, 58 (adv.)	NEWS IN BRIEF
60, 62 (adv.)	THE ARCHITECT'S LIBRARY
62, 64 (adv.)	CORRESPONDENCE

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Plate 11
of a series
showing —
how marble
is being
applied in
the field of
modern design

Modernistic is a word of many meanings. The range in interpretation runs from the grotesque to the severe. At its best it stands for a new kind of beauty.

This view of the Standard Building, Albany, N. Y., was taken from the inside looking out toward the street. In this case as in many others the designers have worked out a thoroughly good idea in the modern marble way.

Black and white marbles were combined with other foreign varieties on this interior. Shreve & Lamb were the architects.

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ANNOUNCEMENTS

Frederick W. Whittlesey, architect, has opened an office for the practice of architecture at 721 Professional Building, Phoenix, Arizona.

Robert S. Hale, architect, announces the removal of his office to 1660 Old Colony Building, 407 South Dearborn Street, Chicago.

Henry J. Nurick, architect, announces that his new office is located at 830 Putnam Avenue, Brooklyn, New York.

Ball and Snyder, consulting engineers, announce the removal of their offices to 110 West 40th Street, New York City.

The firm of Denison B. Hull and Stanley W. Hahn, associated architects, 77 West Washington Street, Chicago, is dissolving on April 1. Mr. Hahn's address after this date will be 6 North Michigan Avenue, Chicago. Mr. Hull will continue at the present address.

The National Airport Engineering Company, 775 East Washington Street, Los Angeles, has opened an office on the second floor of 606 Common Street, New Orleans, with William E. Arthur, engineer, in charge. Mr. Arthur is a registered engineer in the state of Louisiana.

James R. Tyler, architect, announces the removal of his offices from 34 State Street, to 147 Parkdale Terrace, Rochester, New York.

ARCHITECTS CLUB OF BROOKLYN

The fourth annual dinner was held on January 11 at the Elks Club. Officers for the coming year were installed: Maxwell A. Cantor, president; Samuel L. Malind, first vice-president; William T. McCarthy, second vice-president; Alfred A. Lama, secretary; Samuel Gardstein, treasurer and Dominick Salvatti, James F. Bly, Boris W. Dorfman and Michael Margolin, directors.

EXHIBITION OF BATHROOMS

The American Radiator and Standard Sanitary Corporation has established a design bureau for the development of heating and plumbing equipment in relation to architecture and decoration. The current project is the study of the bathroom as an architectural and decorative unit of the house and as a "machine for cleanliness." Five rooms of different types and prices have been erected in the studio-laboratory of the bureau. These rooms (numbers 503-4-5 of the American Radiator Building at 40 West 40th Street, New York City) are open to architects between the hours of ten to four.

PRINCETON PRIZES IN ARCHITECTURE

Two competitive prizes of \$800 each, in the School of Architecture, Princeton University, are announced for the year 1932-33. The competition in design is to be held from May 20 to May 30. Applications must be filed on or before April 20. Address The Director, School of Architecture, Princeton University, Princeton, N. J.

ROTCH TRAVELLING SCHOLARSHIP

Preliminary examinations for the Rotch Travelling Scholarship will be held on April 4 and 5. There will be sketches "en loge" April 11 and 13, open to all who are eligible. The amount of the prize is \$3,000. The Boston Society of Architecture has offered a second prize of \$100 to be awarded to candidate placed second. For further information apply to C. H. Blackall, Secretary, 31 West Street.

EXHIBITIONS AND EVENTS

- | | |
|-------------------|---|
| March | Annual exhibit of the Cleveland Society of Artists in the Builders' Exchange Building, Cleveland. House Beautiful competition designs on display March 1-12. Exhibit of Swedish architecture, March 17-29. |
| March | Exhibition of modern architecture at the Museum of Modern Art, New York City. |
| March 9 | Regional meeting, in Cleveland, of the American Society for Testing Materials. |
| March 10 | Meeting of New York Section, Illuminating Engineering Society, at Electrical Institute, Grand Central Palace Building, Lexington Avenue at 46th Street, New York City. |
| Until March 10 | Exhibition of industrial art—"Design for the Machine"—at the Pennsylvania Museum of Art. |
| Until March 12 | Exhibition of the Architectural League of New York at 215 West 57th Street, New York City. |
| March 28-April 11 | Exhibition of work by members of the American Union for New Architecture at the Hotel Winthrop, 47th Street and Lexington Avenue, New York City. For information, address Richard C. Wood, Room 1405, 120 West 42nd Street. |
| April 17-May 1 | Annual exhibition of the Richmond Academy of Arts, Richmond, Va. Open to all artists native of or residing in Virginia. Closing date, March 31. Address Secretary, 1110 Capitol Street, Richmond. |
| April 25-May 5 | Exhibition of the Westchester County Society of Architects in connection with the second annual Westchester Home Show, county center, White Plains, New York. |
| June 20-24 | Annual meeting, in Atlantic City, of the American Society for Testing Materials. |
| June 25-Aug. 19 | Modern architecture tour of Europe, conducted by Prof. Talbot F. Hamlin of Columbia University. Address The American Institute of Educational Travel, 587 Fifth Avenue, New York City. |
| July 30-August 14 | Exhibition of art at the Los Angeles County Museum in conjunction with the American Olympiad competition of sports buildings by architects of the nations invited to the Olympic games. Address Secretary, American Olympic Committee, 233 Broadway, New York City. |
| October | International Congress for Modern Architecture at Moscow, U.S.S.R. Program: "The Functional City." |

COMPETITIONS

- | | |
|-----------|--|
| March 7 | Mailing date of programs to approved candidates for the fifth annual competition for the A. W. Brown Travelling Scholarship. Address William Dewey Foster, 25 West 45th Street, New York City. |
| March 15 | Closing date of drawings for Le Brun Travelling Scholarship Competition. Chester H. Aldrich, 126 East 38th Street, New York City, chairman of committee. |
| April 4-5 | Preliminary examinations for Rotch Travelling Scholarship. Apply to C. H. Blackall, 31 West Street, Boston. |
| April 20 | Closing date for applications for Princeton prizes in architecture. Address the Director, School of Architecture, Princeton University, Princeton, N. J. |
| June 15 | Closing date for entries for Douglas Fir Plywood Manufacturers design competition. Address C. H. Alden, professional advisor, Skinner Building, Seattle. |

FIR PLYWOOD DESIGN COMPETITION

Prizes totaling \$1500 are offered for rough "idea-sketches," in plan and elevation, showing practical and attractive uses of Douglas Fir Plywood for any of the following interiors: (1) attic bedroom; (2) basement recreation room; (3) kitchen and breakfast nook; (4) camp cottage including sleeping, cooking and living facilities for four people. Copies of the contest rules may be obtained from Mr. C. H. Alden, Professional Adviser, Douglas Fir Plywood Manufacturers, Skinner Building, Seattle, Washington.



HENRY WRIGHT, architect of housing developments at Sunnyside, Radburn and Pittsburgh in association with C. S. Stein.



EUGENE H. KLABER, Chicago architect associated with E. A. Grunsfeld, Jr., in the design of Mich. Blvd. Garden Apartments.

IN THIS ISSUE . . . Mr. Wright and Mr. Klaber have collaborated on a study of low-cost dwellings which is a significant development in present-day efforts to find a technical solution to the housing problem. . . . In addition to the annual Portfolio of Apartment Houses, there is a showing of apartment designs recently awarded prizes by the New York Chapter of the American Institute of Architects.

NEXT MONTH

The feature of the April issue is a presentation of prize-winning designs in the annual BETTER HOMES IN AMERICA competition.

Other articles include:

SEATING—A study of standard sizes and spacing of seating facilities for schools, theatres, churches and amphitheatres.

EMPLOYMENT OF DRAFTSMEN—The relief program outlined for Boston and New York City.

NEW MATERIALS—A summary of products used in the buildings now being constructed for the Chicago World's Fair.

PORTFOLIO OF SMALL COMMERCIAL BUILDINGS—The Goodall Shop in New York City by Eleanor LeMaire; the "Bachelors' Shop" in Los Angeles by J. R. Davidson; a shopping center in New Canaan, Connecticut, by Alfred Mausloff.

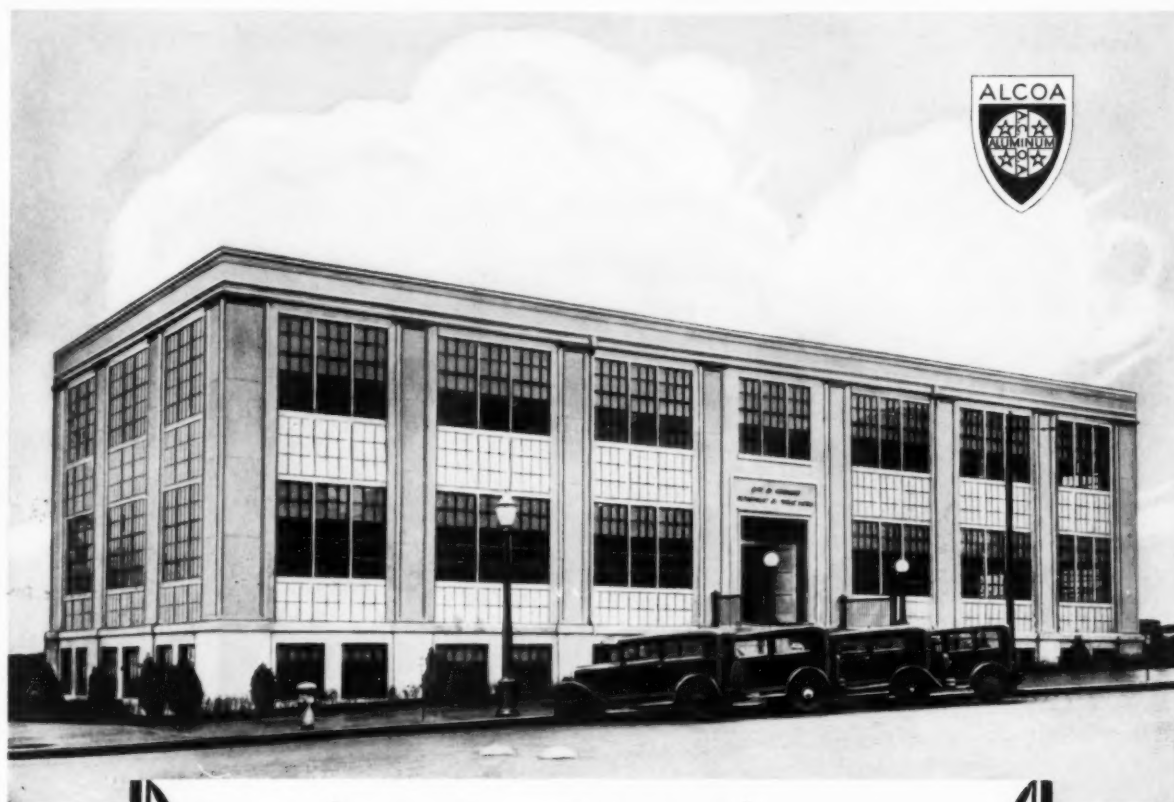
A CHURCH—The Healy Chapel in Aurora, Illinois, by George Elmslie, architect.

A PUBLIC BUILDING—The State Education Building in Harrisburg, Pennsylvania, by Gehron and Ross, architects.



Gottsch

GOLD MEDAL AWARD—BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION FOR 1931
HOUSE OF FRANCIS COLLINS, FIELDSTON, N. Y.
DWIGHT JAMES BAUM, ARCHITECT



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Building: City of Richmond, Department of Public Works; Architect: Department of Public Works; General Contractor: Department of Public Works; Sub-Contractor on Aluminum Work: *Hankins & Johann*, Richmond, Virginia.

*Satin finished aluminum sheet used for entrance.

Rectangular aluminum tubing and aluminum plate for doors.

Extruded sections of aluminum for door jambs. Extruded sections of aluminum and $\frac{1}{4}$ -inch, sand blast finish aluminum plate for pilaster columns.

Extruded sections of aluminum and 13 gauge (B & S) aluminum sheet for entablature.

Satin finished aluminum sheet for interior partitions.

Satin finished aluminum sheet for wall sections between windows and entablature.

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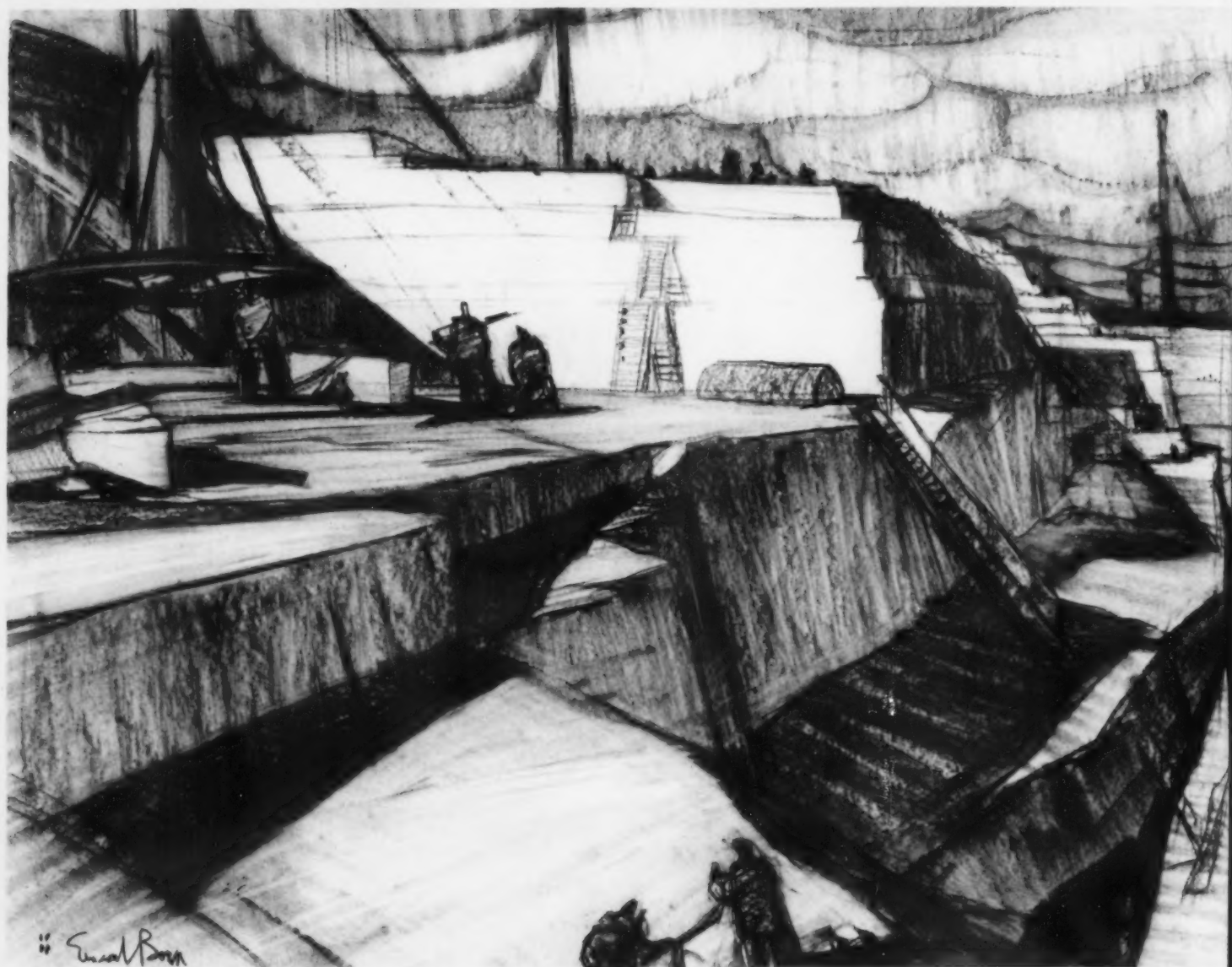
The following comes from a letter by A. Moorman & Company, of Minneapolis, bank builders, in commenting on a car installed by Otis in Spokane, Washington: "This is the most beautiful elevator car that we have seen. The workmanship is excellent and the finish, castings, and all the equipment are as nearly perfect as any one could hope to obtain."

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motors and controllers and brakes, but to such things as elevator entrances, fixtures, and cars—visible portions of the elevator which can either add to or detract from the appearance of the building. Thus it is that Otis has a special department of architectural designers, artists, and craftsmen for the purpose of adapting modern architectural practice and the ideas of the building architect to the visible details of an elevator. Within this department many interesting elevator cars and accessories of excellent modern design have been created. Here also craftsmen faithfully produce any special design conceived by the architect.

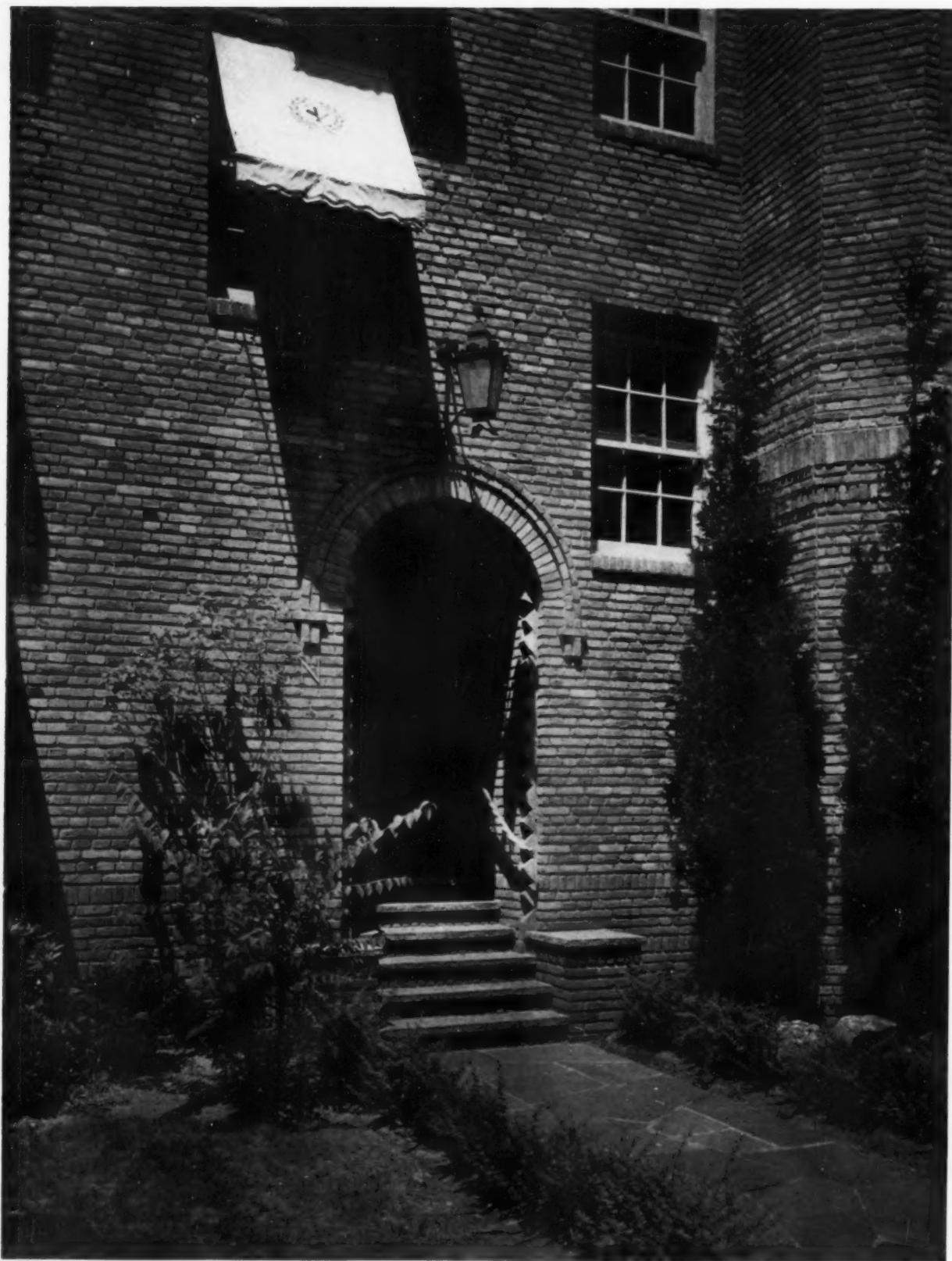
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Van Anda

VAN TASSEL APARTMENTS AT NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

HOW CAN APARTMENT FACILITIES BE PROVIDED

FOR THE LOWER-INCOME GROUPS?

By HENRY WRIGHT
Architect and Town Planner

The failure to realize new business activity forecast by statisticians may be related to our consciousness that the causes of the depression are more fundamental, and probably more simple, than facts which are to be revealed through statistical research. We find ourselves in the position of the unmechanically-minded automobile owner who finds his car stalled five miles from the nearest garage and who, after he has, in turn, investigated the carburetor, the timer and the tail-light, becomes suspicious of further suggestions from well-meaning bystanders and longs for the appearance of a man in overalls.

In this article it is proposed to trace some of the causes of our present economic plight. These, it appears, correspond with the troubles of the stranded autoist who has merely run out of gas.

The latter years of the past decade were a period of riotous living, nowhere more marked than in the construction industry. The crest of the super-induced building prosperity carried far inland. The studies of various Committees of the recent Washington Housing Conference show convincingly that the production cost of dwellings, some 45 per cent of the whole industry, had become entirely out of line with our needs in terms of economic reality. Although statistics have been foresworn in this

This article opens a series of related studies by Henry Wright and Eugene H. Klaber in this annual Apartment House number. Taken as a whole, they present an entirely new approach to the problem of producing low-cost dwellings in the reconstruction of blighted areas in our large cities.

The first study presents an economic analysis which leads to the conclusion that a new dwelling type, which will provide for a fairly intensive use of land without entailing apartment-house service costs, may be a possible solution. The design of this new dwelling type, Mr. Wright points out, is dependent on the technical inventiveness of the architect.

Following articles by Mr. Wright and Mr. Klaber present solutions which meet the requirements established by an investigation of housing costs. The Technical News and Research article of this issue gives a complete survey of building costs and rent charges which demonstrate the feasibility of these new schemes.

article, it may be in order to repeat the fact that, while the cost of new dwellings has centered at the equivalent of \$60 to \$65 in monthly charges without heat, rentals have centered at from \$35 to \$40.

Another phase of our activity during this period is worthy of consideration. Things had been coming so easily that we were quite content to know (if we cared to know at all) that a great section of our construction, that of small houses and cheap multifamily dwellings, remained in the hands of poorly trained and often unscrupulous builders, who understood or thought little of either good quality or good taste, but who covered in a vast wholesale manner great areas of our new suburbs, representing expenditures of hundreds of millions of dollars. Into all this activity was going a minimum of either well-considered ideas or real construction value. We were too easily convinced of an enduring prosperity to realize that these competitors were wasting our potential business chances, just as surely as if we ourselves had been turning clients away and suggesting that they proceed to build without technical advice. It is this mass of unassimilated and disreputable construction, which not only clutters the city borders, but stands in the way of new construction.



Old type two-family flats common in New York City and now technologically outmoded. The second-floor apartments have heat supplied; deliveries come through the front stairway.

There is, however, one barely possible (and if possible, fortunate) rift in this clouded picture. The processes of this drab, unimaginative and flimsy mushroom growth have been wasteful in the extreme. The products have been cast largely in antiquated forms, ill-suited to modern life, and not providing for the real needs of the individual family or prepared to assume responsibilities for civic and social equipment. Even in cheapness they have represented more than the owner could afford in monthly payments, if he could and would have those other necessary accompaniments which make the desirable community. Nor can such districts ever require complete civic and social furnishings because, in addition to their outmoded individual fashions, these houses are set in an extravagant and costly pattern of streets and other civic equipment; they cannot take advantage of economies being made possible by new self-contained household services, such as heat, refrigeration and waste disposal, which no longer require costly direct street access to individual dwellings.

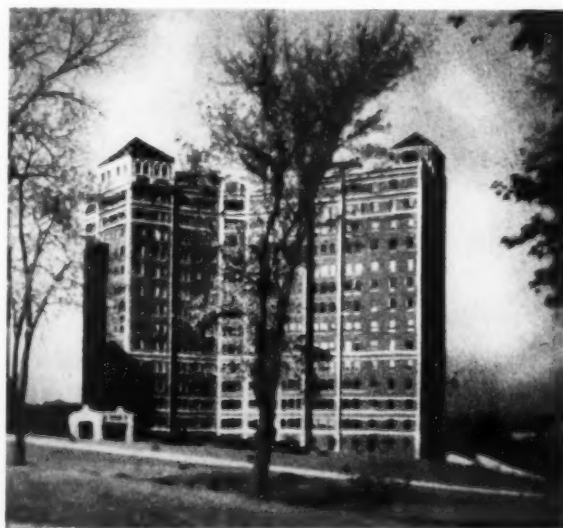
It is suggested (and described more particularly later) that technical competence can be applied to the production of new forms of modern dwellings, superior to recent products of the jerry builder and yet at a lower cost level which will not only compete with these existing dwellings but reach new economic groups not previously served in any manner. The report of the Committee on Large-Scale Operations (President's Housing Conference) is referred to for detailed suggestions as well as for an explanation of the two leading types of existing low-cost housing known as the Garden Apartment and the Group Row House.

However, before entering the subject of what may be set up in actual and successful competition to our existing oversupply of cheap and incomplete facilities, it may be well to examine further

the accomplishments of the past decade, in terms not altogether revealed by statistical charts.

The quantitatively large building program of this period becomes less impressive when we realize that, while some of our dwellings were highly spectacular in effect and did, in fact, employ a larger proportion of technical services than in preceding periods, the net result in the extension of substantial new residential communities was rather negligible. Our finer communities were unquestionably finer than before, but our poorer communities were also relatively poorer and less substantial than those of the decade of rapid building from 1905 to 1915. The quantitative effect of the new trend to serviced apartments may be easily overestimated. While it bulked large in the current statistics of the peak years of 1925-28, the effect on our sum of housing accommodations was small.

In 1930, it has been found by an extended research, not more than 6 per cent of our dwellings in a large number of representative cities of the central and eastern states had heat supplied from a central source common to more than one or perhaps two families. This figure includes a large number of three-story apartment flats of archaic design, which cannot really be classed as serviced apartments; hence, only somewhere between 3 and 4 per cent of housing in the larger cities is as yet represented by modern apartment dwellings. About 47 per cent of the population still live in single houses, and nearly 50 per cent in some form of flats, chiefly of the two-family variety.



ALDEN PARK MANOR, PHILADELPHIA
EDWYN RORKE, ARCHITECT

New serviced apartment type too expensive for 80 per cent of incomes because of the many services involved in the rental.

THE CAUSE AND SPREAD OF BLIGHTED AREAS

A very large proportion of housing production, representing the statistically quantitative elements of the recent past, has been in cheaply constructed single and small multifamily dwellings, in scattered or incompletely serviced areas at the borders of our cities. It has been found easier from a business standpoint to abandon or neglect the older sections of our cities and to found new housing colonies on "unspoiled" suburban land. This would, perhaps, be an estimable procedure, if our new communities were definitely better, more modern, or more desirable than the old; assuming, of course, that cities were financially able to provide the new services without withdrawing those in older districts. But most of our new communities partake of all the defects which have caused the older to deteriorate, and by postponing most of their public service costs have not revealed until recently the incapability of the city to continue expansion without the risk of bankruptcy. In the meantime, great areas of the city have remained stagnant and have become increasingly drab and undesirable.

Blighted areas have continued to increase in our cities because:

1. No public or business interest has been devoted to these older areas, which represent fully exploited opportunities in terms of new building or investment.

2. No new technical development has arisen to provide new forms of dwellings economically suited to filling the vacancies or rebuilding the better located portions of those areas in terms of moderate income needs.

3. Many of these areas were built in wholesale fashion which rendered them inherently blighted at the outset.

Therefore, we find that our blighted districts are now spreading, not because new competing communities are really better or more attractive, but rather because no attention is being paid to the older areas and no one has been concerned with the problems of evolving new methods for completing or rebuilding them in terms of current technology. Unlike the recent products, many of these areas of small multifamily or row dwellings constituted in their time an effective, if not altogether desirable, form of new substantial construc-

tion which could be rented or sold within the means of a large proportion of the clerically and industrially employed. Their construction was fairly sound and their municipal equipment often complete, although in terms of present technological changes their wastefulness in both building plan and land use has rendered them no longer available for the purpose which they once served.

Does our present method of city building offer any such hope of substantial city expansion? It has been fully demonstrated through fact and experience that for the average income groups the single-family dwelling cannot be built either within income requirements or capable of really absorbing the actual service costs of city improvements and conveniences.

On the other hand, the apartment offers no better or more promising means of meeting the needs of these large groups within our cities. The apartment is a solution of higher-cost dwelling space based on the problem of higher land cost, which is an inevitable attribute of wholesale city building. So few are the really livable parts of our cities that all who can afford the luxury of space and comfort crowd into a few small districts representing only a small per cent of the total area of the city. However, even aside from excessive land costs, the service costs of the apartment place it beyond the reach of the average family income. But let us suppose that the apartment can be brought economically within range of the average family—would even this measurably retard the spread of blighted districts, the miles of worn out or obsolescent dwelling areas of our large cities?

It is estimated that in Chicago, to take one example, there are 40 square miles occupied by two-family and three-family flats alone. To rebuild these areas with 8-story apartments on the basis of the present street and lot pattern would require a 300 per cent increase in the present total population of the city.* Technically speaking, it might, of course, be a very fine thing to replace these districts with a series of isolated apartment dwellings surrounded by vast open spaces, as outlined by M. Le Corbusier, but this is economically so far removed from our methods of land holding or our income capacities as to be wholly idealistic at this time.

TECHNICAL SOLUTIONS CAN PROVIDE MODERATE-PRICED HOUSING

The problem of providing new dwellings for average incomes has remained unsolved primarily because the technician has been concentrating his attention on the luxury house.

The business man and the more intelligent mass builder of our new dwelling areas deserve a measure of credit in that they have carried on, within their ability and the accepted perquisites of

the trade, widespread building activity during the period when others were concentrating their attention elsewhere. This trend has finally run its course because of inherent wastes and the lack of imagination of its adherents, both factors having contributed to the growing discrepancy between

*Many authorities disagree with this assumption that *entire* ground area would necessarily be occupied by tall apartment buildings.

cost of product and absorptiveness of the market. The end would have come sooner except for gallant efforts at super-salesmanship and superficial prosperity. Much of this super-salesmanship business has already paid toll in wrecked banks, mortgage foreclosures and repudiated bonds. The course has been run, but building will begin again only if and when business is ready to attack the nonluxury market in terms of business efficiency which will make products more obtainable.

We have had less building because more and more capital has been taken by the business (or unbusinesslike) processes of:

- (a) conversion of land into use for dwelling purposes;
- (b) highly stimulated marketing of the final product.

In fact, the costs of (b) mounted as the effects of (a) and the wastefulness of the building process placed the product further beyond the purchasing power of those for whom it was intended.

But even if business should take its full cut in the general deflation, we would yet find ourselves at a standstill, since all the present forms known to the building trade and available in the past to the moderate-income group have been outmoded by current technological processes and modern service standards.

The job at this point has become one for the technician rather than the business man, and there is no reason why the former should not make the first move toward the eventual solution of the problem, even though business may have yet to add to its losses before it is ready to supply its services within the needs of the new reconstruction period economy.

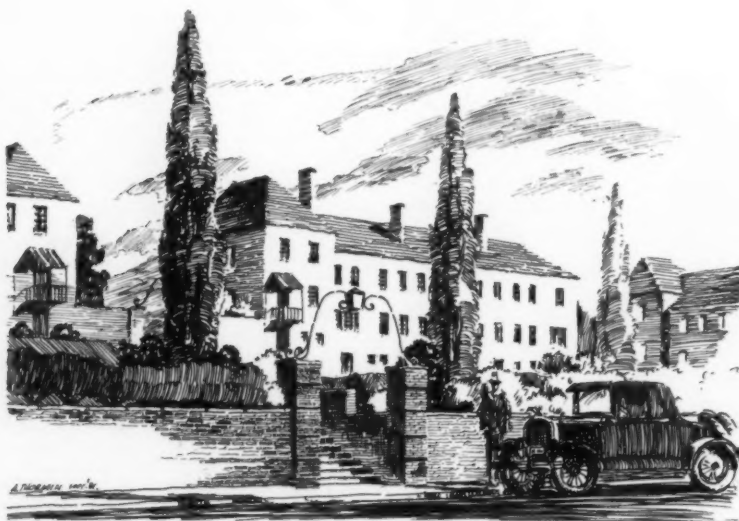
The problem must be isolated in terms of economic necessity before it can be solved in terms of planning technique. The need, however, is well revealed when we consider that our upper incomes have been generally well supplied with the two luxury dwelling extremes: on the one hand the complete well-built single-family dwelling, on the

other the modern serviced apartment. The need lies between these two. We should not be confused by the fact that under certain conditions, usually of a temporary nature, the obligations of the single-family house may be either avoided or postponed, while the quality may be reduced to a minimum with which no form of dwelling in well-furnished communities can possibly compete.

The problem is not to see how cheaply we can provide a temporary substitute for the old-time single-family dwelling—in the opinion of thoughtful persons the recent housing conference which hoped to prove that we could again start up the old discarded machine only emphasized the deficiencies of its past—but to devise a moderate-cost urban dwelling with which we can rebuild or extend city areas and which will carry a legitimate part of the complete community obligations. We have seen that the two- and three-family flat did this in the past on land at costs equivalent to the present costs in large, reasonably well-equipped and well-located city areas. We may forecast that something somewhat similar to the flat but adjusted to present technological requirements and family needs might again provide the same function in terms of incomes and city rehabilitation.

This is the problem that we must face in the light of present conditions.

One general observation may be in order before we go into the intricacies of technical study in outlining the possible evolution of new dwelling forms adjusted to the new age. The greatest fault of our much vaunted prosperity was that it permitted us to form a habit of regarding only the exceptional in building as of interest or worthy of our technical care. What we must carry forward is the thought that the least and meanest element in our city building is worthy of the same care that we would bestow on the greatest buildings. If future blight is to be avoided, the original conception of the community must be one of intimate and permanent interest. Only so will the reconstructed city be worth reconstructing.



South entrance to the Buhl Foundation Housing Project (Ingham and Boyd, architects) now being completed in Pittsburgh. Rentals are available to clerical workers. This development is a contrast to the usual process of building up residential areas by continual spreading out of one general and unimaginative pattern, a trend which this article interprets as a cause of blighted districts.

LOW-RENTAL DWELLINGS

—How Can Construction and Service Costs of Apartment Buildings Be Reduced?

The very real and definite need for new dwelling and construction can be supplied only if the inventiveness of the technician can be centered successfully on the discovery of new forms of dwellings.

The successful solution must incorporate an efficient use of land; it will supply those services, such as street access, water, gas and sewage, and probably heat, which are technologically supplied most efficiently in common, but it will avoid the costly additional construction and service features of the apartment. These features include fire-proof stairs, roof equipment for drying laundry, dumb-waiters and fire escapes, together with their maintenance and service. To the first list of requirements should be added, if possible, the redistribution of open spaces to provide individually-maintained gardens in place of community-maintained lawns and planting.

An important factor in solving the problem will be the potentially more efficient use of typical city blocks, 250 to 300 feet deep in many large cities, for low-type buildings in court groups without street frontage. This more intensive land use, however, would provide these lower buildings with sunlight standards superior to most apartments, even the garden type, and also should make possible a small and convenient individual garden plot for nearly every family. The basis for assuming that direct street frontage is no longer necessary for such dwellings is that all modern housing will be supplied with:

- (1) heat from a common source or from individual heaters to which gas or oil fuel is piped;
- (2) refrigeration of mechanical origin;
- (3) waste incineration of some appropriate form.

The block studies appearing in this article are all based on these assumptions. In most cases they provide separate entrances from individual door yard gardens, but many dwellings are removed from direct street access and from garage accommodations.

The problem has now been defined in terms of requirements. Its solution must be based on a continuous and related adjustment of all factors which enter into the final product in terms of ownership or rent. Rent is the simpler form to consider for comparative purposes, although in nearly every case the plans suggested are suitable for some form of ownership.

The remaining factors in the problem require the technician to be aware of varying costs under dif-



Brown Brothers

A TWO-STORY FLAT AT SUNNYSIDE, LONG ISLAND
FREDERICK L. ACKERMAN, ARCHITECT

This building, a unit in a row group, offers efficient accommodations for four families. The inside four-room plan, which is characteristic of the interior row suites, has been taken as the "yardstick" measure in this study of costs to determine a new low-rental dwelling type.

ferent building forms and land coverage. The architect must, as we have shown previously, become an analyst if he is to apply intelligently the principles of design; we are now asking him to think economically, not that he can do the job as thoroughly as the economist but because the problem must be solved with the fundamentals of design and economy continuously in mind. *It is easier for the architect to acquire the fundamentals of rental economy than for the economist to acquire the fundamentals of technical design.*

Solutions Based on Known Building Costs

In order to prove, logically and soundly, the suggestions which are presented in this article as a basis for new types of group dwellings fulfilling the problem requirements, it has been necessary to analyze carefully the itemized costs of known types of efficient flats and three- and four-story garden apartments, and to convert these costs into the capital charges for building and land which enter into the annual interest, taxes and depreciation costs of rented dwellings. It has been necessary to investigate carefully all other service and management charges in such rents and to determine equitable charges for the new forms which are suggested. To do this, facts were secured as to the cost of fuel and the wages of engineers and janitors in two-family dwellings and in apartments of similar size, design and construction; the costs of cleaning as well as lighting common stairs; repairs and similar factors broken into detailed items not usually considered important in determining rentals in dwellings of known experience.

The technical studies which parallel these suggestions and support the conclusions will be found



A NEW TYPE OF THREE-STORY TWO-FAMILY FLAT

Each unit, 20' by 28'4", has ten rooms. The first floor suite has a bedroom on the second floor. This building requires 2,147 cubic feet and 2 lineal feet of frontage per room as compared with the two-story "yardstick" flat (25' by 28'4") which requires 2,510 cubic feet and 3 1/8 feet of frontage per room. Rooms average the same size in both flats.

on pages 213-216 of this issue. They provide a fairly accurate method of procedure for a combined technical and economic study of problems of this nature. Not every factor is absolute, but efforts have been made to preserve at every point the integrity of the process and the uniformity of application of all factors as accurately as possible.

In describing the suggested solutions, the danger of setting up actual architectural forms is recognized as diverting attention from the more important *principles* involved. The suggestions form only a few of many possible interpretations. The task of evolving the underlying principles has pre-

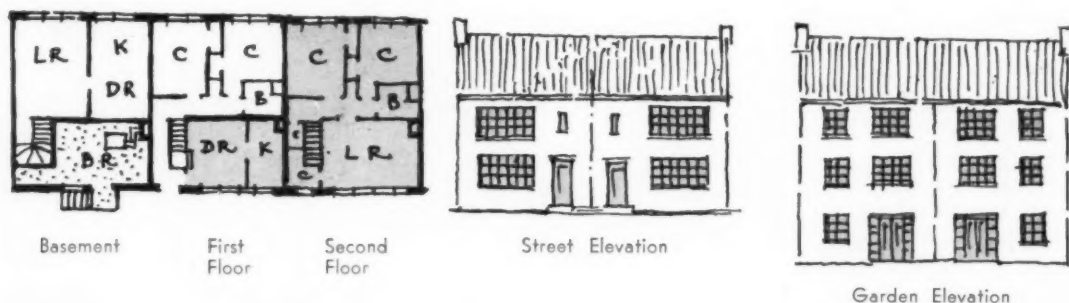
vented more than a crude application for the purpose of elucidation rather than emulation. Since the analytical factors have been based upon the 1926-27 technique of brick and joist construction, the present interpretation has been expressed in corresponding architectural forms. It remains for others to extend the application into more modern construction.

The first step in the analytical process was to make a careful and equitable comparison of costs of known two-story two-family dwellings, and three- and four-story apartments of practically identical plan and construction, except as required in change of type and story height.

This comparison revealed the fact that the savings in building cost due to superimposing more stories were more than offset by the added costs of safety and service equipment without even taking into account the additional costs of maintenance service for the apartment dwellings. These differences were represented by building cost figures of \$805, \$903 and \$910 a room for the two-, three- and four-story buildings, respectively. When these building costs were combined with land costs in the proposed block arrangements, rather than with individual street frontage (as actually built), it was found that even two-story two-family dwellings could compete in capital costs with three- and four-story apartments of identical plan on land up to \$1.50 a square foot. With the difference in service costs the two-story flat could compete with the three-story apartment on land at \$2 a square foot.

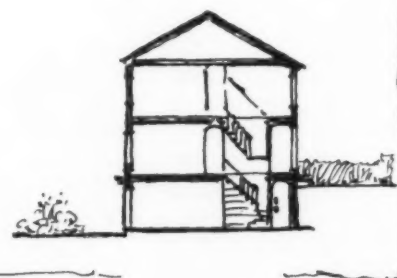
Conclusions Reached by Comparison of Costs

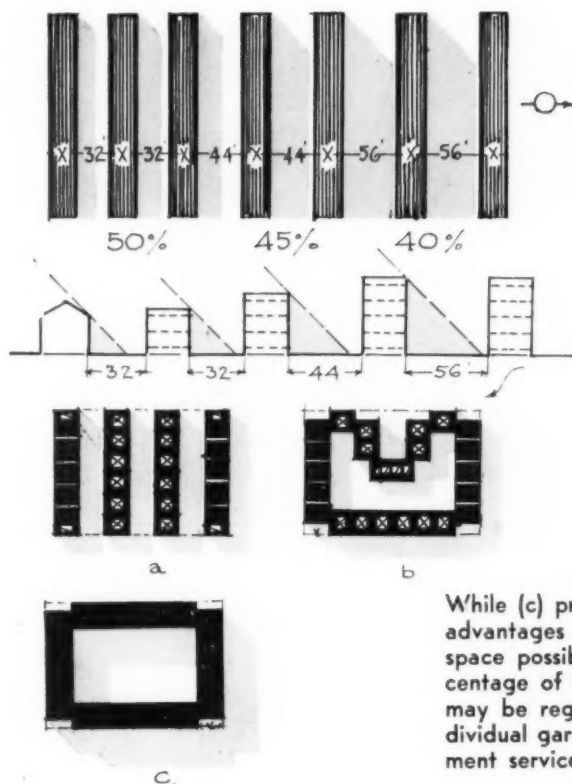
Upon this showing is based the first important conclusion. In cities where large blighted areas are now occupied with the usual wasteful two-story flats on individual narrow lots, it will be frequently found possible to purchase these old properties at



TWO-FAMILY FLAT WITH TWO STORIES AND BASEMENT FOR A HILLSIDE LOCATION

The lower garden side of the exposed basement is used for living rooms, the street side space for boiler room or pipe tunnel accessible to janitor.





STUDY OF RELATIVE COVERAGES AND SUNLIGHT EXPOSURE FOR TWO-, THREE- AND FOUR-STORY DWELLINGS

Spacing required for dwellings facing south in order to provide full sunlight at 45 degrees. All buildings are 28'4" deep; all coverages are based upon net area in full block 450 feet long.

EFFECT OF OTHER GROUP ARRANGEMENTS:

- (a) 50 per cent coverage, two-story, all facing south as above.
- (b) 50 per cent coverage, three-story, perimeter grouping.
- (c) 50 per cent coverage, four-story, full perimeter plan.

While (c) provides a superior open space, it sacrifices the advantages of full sunlight and access to individual garden space possible only in (a). In the case of (b) a large percentage of families can have individual gardens. Plan (c) may be regarded as superior for families not desiring individual gardens, and able to pay the added cost of apartment services.

\$2 a square foot or \$300 a front foot 150 feet deep (which is a not uncommon block depth in many cities). This price will include the current value of the old buildings, which can then be razed and replaced with modern, efficient two-story flat dwellings in block organizations similar to the proposed block plans.

In these areas would be housed about twice the existing population at rentals, including heat, less than those in present forms of cheaper and undesirable apartments.

Doubtless much of our city land of this character will have been covered previously by equally antiquated and inefficient three-story flat apartments. The salvage site values of these districts may be too great to replace them with two-story flats even under improved building and block plans. The second necessary development in city rehabilitation seems then to be to set up an efficient three-story structure which will not entail the additional construction and service costs necessary to all known apartment dwellings.

Here then is a problem for pure technical inventiveness. If it can be solved, the results are almost limitless. It is definitely known, for instance, that the old wastefully arranged three-story double apartment flat requires 60 per cent more heat per room per season than an efficient five-story apartment on the adjoining plot heated by separately metered steam from the same boiler plant.

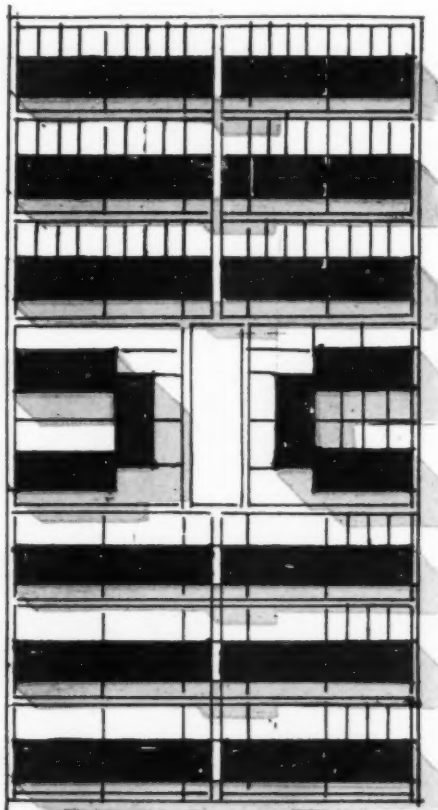
Notwithstanding the saving in fuel made possible by substituting the efficient apartment plan for the inefficient plan, there are still some expensive safety and service features which even the three-story apartment flat requires, although in less measure. If we can in one operation produce three-story dwelling space which is efficient but which obviates the additional safety and service features of either the three-story apartment flat or the taller apartment house, we shall then make real headway in providing housing for the lower-income groups. At the same time we shall have evolved a new type capable of replacing present widespread three-story dwelling districts at salvage land values sufficient to pay for wrecking these present outmoded dwellings.

The solution proposed here is simple. It is accompanied by cost studies which provide a large factor of safety for possible errors in the less absolute factors of initial and maintenance costs.

A New Dwelling Form

It would be too much to say that a new dwelling has been invented. Its prototype may be found in certain recent examples of apartment-house design in England and Germany, where flat and two-story house units are combined in buildings sometimes five stories high, to which public access to the individual dwellings is had by means of a central stair leading to external "balcony" passageways.

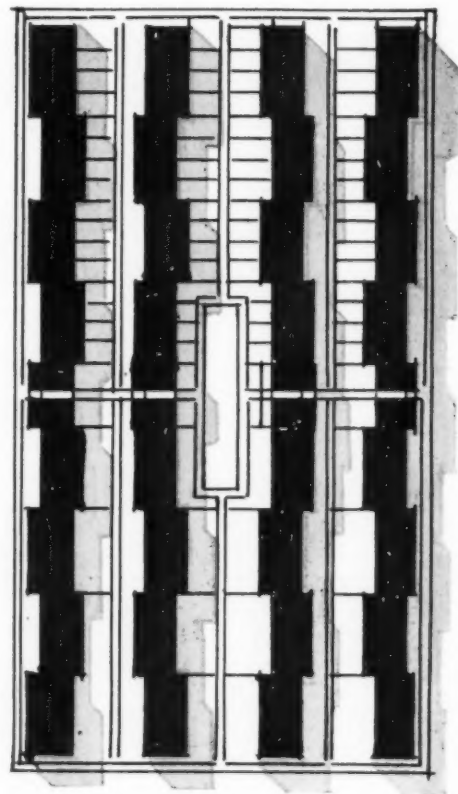
BLOCK ARRANGEMENTS FOR TWO- AND THREE-STORY GROUP DWELLINGS for blocks 440' by 240' to building line on street side. Additional width of 20' required for street front yards in schemes (B) and (C). All shadows cast at 45 degrees.



SCHEME A:

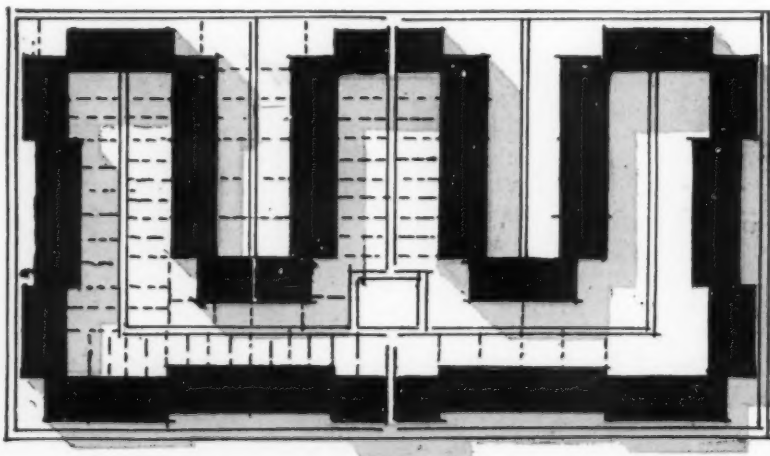
Block running north and south. Practically all dwellings face south on individual garden spaces. All suites run through building. 49 per cent coverage; 48 two-story, 18 three-story buildings; 624 rooms.

NORTH
↓



SCHEME B:

Block with dwellings running north and south. All room exposures and gardens have sunlight either morning or afternoon. 47 per cent coverage; 64 two-story, 4 three-story buildings; 572 rooms.



SCHEME C:

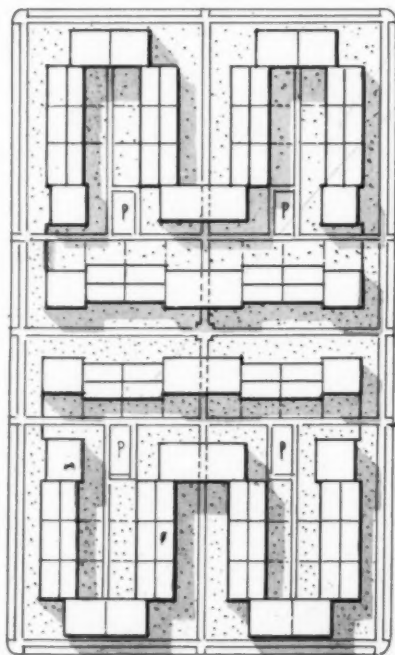
Block running east and west. Large percentage of units have east and west exposures. Long north front dwelling group has principal rooms on south garden side. 44½ per cent coverage; 22 three-story, 38 two-story buildings; 612 rooms.

A NEW TYPE OF LOW-COST NON-SERVICED APARTMENT Final Three-Story Dwelling Designed To Rent Measurably Below Present Levels



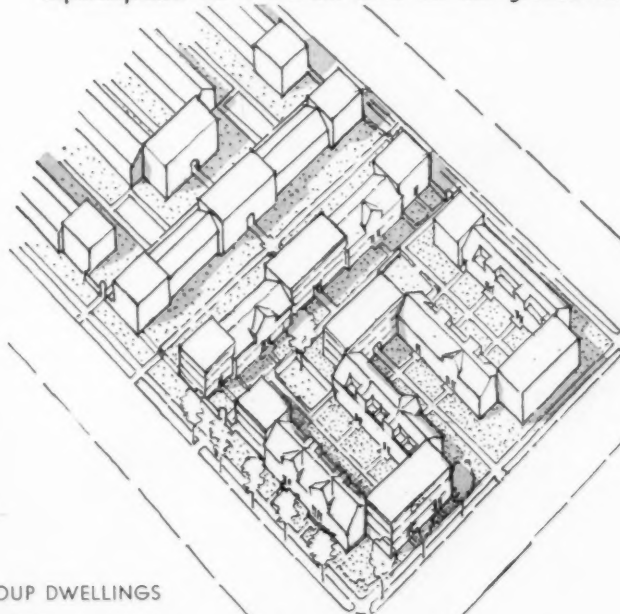
PLANS AND ELEVATIONS OF GROUP DWELLINGS

Each building has two 2-story suites, each with 4 rooms, superimposed on a 5-room suite on the ground floor.



BLOCK PLAN OF 2 1/2- AND 3-STORY GROUP DWELLINGS

Plot 260' by 460' to street line; 42 1/2 per cent coverage; 24 14-room and 32 12-room units. 720 rooms at \$166 a room on land at \$1 a square foot.



This new dwelling stays within the three-story limit by the simple expedient of superimposing two 16-foot four-room-and-kitchenette two-story dwellings over one five-room unit 32 feet wide on the ground floor. The entrances to the upper dwellings are at the ground level and do not differ from entrances to a second-story suite in flat buildings without interior common halls. The house occupant proceeds to his own third-floor sleeping rooms in a manner no different than that of the second-story flat dweller who happens to have rooms in his attic. Although these proposed buildings might not be constructed within the requirements of

present building codes in many cities, there is no reason why they should not be readily accepted with the necessary adjustment.

Each family has its own outside entrance door and its own individual garden. There is no longer any need for distinguishing the front or rear of any dwelling since there are no delivery services such as ice, the removal of refuse or the supply of coal, all of which have been taken care of by internal devices, power wires or piped fuel. Thus the garden space may be completely allocated, on opposite sides of each building, for the ground floor and upper floor occupants. The garden on

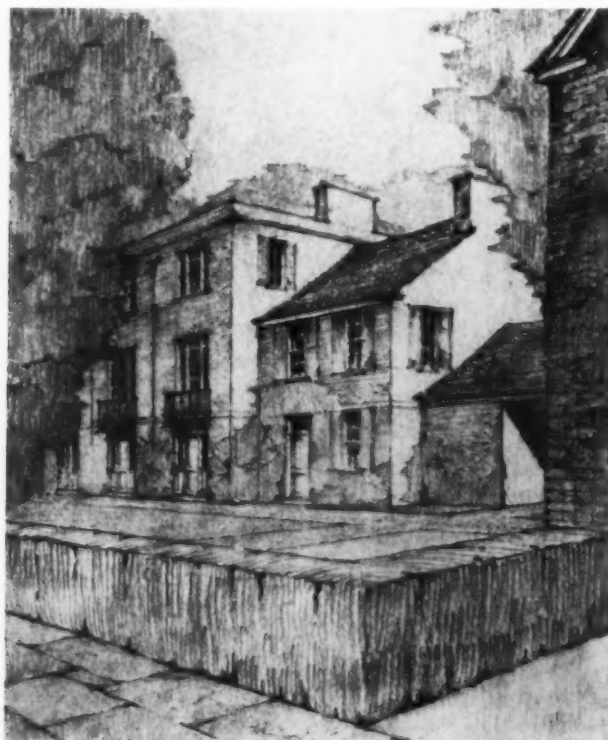
the first floor side is amply large to provide latticed laundry yards if desired. To maintain the simplicity of plan in regard to stairs, it would be essential for the second-floor families to have an outside area entrance to the common basement laundry. Since either gas or oil heat would be used if heat were generated in each building the space occupied would be small and the operation relatively clean, so the remaining large basement space could be used for laundry and play space.

The economies of this plan are based on: (a) the sharing of costs of basement and roof space by three occupied floors without entailing the extra costs for safety and services which would be required in an apartment building where the third floor suites have no rooms on the second floor; (b) the reduction in land cost by placing efficient flat and row-house dwellings throughout the area of the block without providing street frontage for many of the individual units; and (c) the reduction in costs of operating services by eliminating external as well as internal service requirements of the apartment. In the cost studies (see pages 213-216) it will be seen that the relative production costs per room of various types of dwellings of similar plan and construction are: two-family, \$805; three-story apartments, \$903; four-story apartments, \$910; and for the above group dwelling, \$793. The cost per room for land (at \$1 per square foot with approximately 40 per cent cover-

age for four-story, 45 per cent for three-story, and 50 per cent for two-story buildings) is \$193, \$141, \$119 and \$154, respectively, for the four types. The total capital costs per room with carrying charges is \$1,022.08, \$1,071.57, \$1,056.64 and \$970.68. The reduced service costs add to the advantage of the new type of group dwelling, so its monthly rental per room on \$1 land is \$10.88 as compared with \$12.15 and \$11.74 for three- and four-story apartments. The group dwelling remains cheaper than four-story apartments until land reaches nearly \$5 per square foot.

It is anticipated that in all forms of multifamily dwellings noise insulation will be successfully accomplished in some form commensurate with low-cost construction. There are many ways in which the roof can be made accessible to upper floor occupants. If laundry is done within the individual apartment or sent out and heat is supplied from a central source, basements could easily be omitted. In mild climates it would be possible to provide access to the upper-story suites by means of outside stairways.

In the following article Mr. Klaber approaches the same problem somewhat differently. He retains the apartment stair but reduces the size of the bath and kitchen equipment in the individual dwellings, providing also an individual heating unit. The first costs will show a saving over usual apartment building types.



Group dwellings in two- and three-story units built at Mariemont, Ohio. They demonstrate the community interest possible through the application of the economic principles developed in this article. Original sketch by Edmund B. Gilchrist, architect.

REDUCING APARTMENT COSTS BY ECONOMY OF (1) PLANNING, (2) CONSTRUCTION, (3) OPERATION

By EUGENE H. KLABER, Architect

The problem of housing is to furnish dwellings for that large proportion of the population who can afford to pay \$35 or less per month for a home. If we can attain that price level, we shall have accomplished a step toward our goal, although it must be borne in mind that of this 62½ per cent of the population more than half are now paying \$25 or less.

To come to grips with this problem, it is necessary to examine critically, not only the financial and physical features of the dwelling, but also the social concepts which have guided our approach to the problem in the past. This approach has always been based on an idea of well-being, accepted *a priori* and forming what we have been wont to call "The American Standard of Living." The attempt has always been to attain as high a degree of amenity as possible at rentals somewhat below the current price levels for speculative ventures, but profiting in some instances by the advantages to be obtained through large-scale operation and tax exemption. In almost every case it has been accepted without question that the highest degree of amenity and luxury attainable should be aimed at.

This point of view has led to the production of housing which is in competition with commercial ventures, and such competition has made it all the more imperative that conveniences be furnished in excess of what commercial builders were currently giving in order that a large percentage of occupancy might be reasonably assured. Even though the original intention of a housing project may have been to meet the needs of the lower-wage groups, it has only too frequently occurred, as a result of this point of view, that the very people for whom the projects were intended were financially unable to occupy them, or, if they did, they found themselves obliged to double up with other families in order to meet the rent. Needless to say, this sort of thing leads to overcrowding.

It is generally recognized today that private initiative, working along customary commercial lines, cannot furnish housing for the lower-wage groups, and we accept the fact that, in order to reach these, subvention in some form is a necessity, whether it be by foregoing the customary interest rate on money, by tax exemption, by government loans or by direct government subsidy. Wherever subvention enters into the picture, the effort should be to provide rentals that private initiative cannot hope to produce under any circumstances. The poorer the man who is to be benefited, the more necessary that benefit becomes, and we

can justify special assistance only by reaching people much lower in the wage scale than we have been able to reach in any housing project which has been constructed in this country. This means that not only must cost of land and interest on money be reduced to a minimum, and construction costs kept low by large-scale operation, but equipment and service of the building must be reduced to conform to a minimum standard of necessity and not be keyed up to a maximum of luxury.

Not only is this program advisable, but it is the only equitable basis on which we can ask for government aid. A majority in this country believe that private initiative should be encouraged and allowed to be operative as far as possible. Under these circumstances, it is inequitable to produce housing similar to that produced privately which, by virtue of a subvention, can undersell it. Our plea for special aid for housing is that all should enjoy a minimum of necessary decencies, not that people should be given luxuries at the expense of the community.

We must therefore ask ourselves what is the minimum standard of American living, and in arriving at any conclusion we must eliminate everything except the absolutely essential. This does not mean that houses are to become mere packing cases, but it does imply the omission of some things which unquestionably are minor conveniences of living. It means the foregoing of things done for the average apartment-house dweller that he could quite well do himself. Ideals of service must no longer look upward to the extravagances of the fashionable apartment hotel and the gilded glory of the motion picture theatre. In planning for persons of small means, we must compromise with desires.

As a matter of fact, the comparatively wealthy have already accepted many compromises. What is the modern apartment hotel but just such a compromise, brought about by the increasing cost of domestic service, the high cost of land in desirable sections of our cities, and the desire on the part of many to make living as simple as possible with a minimum of exertion on their part. This has led them to accept apartment-hotel life with its folding beds, kitchenette and restricted quarters. These wealthy people want maid service, linen service, running ice water, ice cubes for cocktails, brass-buttoned elevator boys and a major general at the front door. For these they give up much that many of us consider essential in life. Poorer persons will also be willing to make their compromises; but what they will sacrifice will be the less



(1) APARTMENT HOTEL AT \$100 PER ROOM PER MONTH

A large staff of attendants representing twelve types of services is included in the monthly rental of this apartment. Kitchen utensils, table linen, silver, soap, gas, refrigeration, shower curtains, face and bath towels, bed linen, table runners, furnishings, carpets and stationery are supplied by the hotel management. The construction and maintenance costs of this type of dwelling are extravagant, and the rental necessarily high. The manifold services are far out of reach of low incomes.



essential service elements and their compensation will be a greatly reduced rental for the essentials of decency.

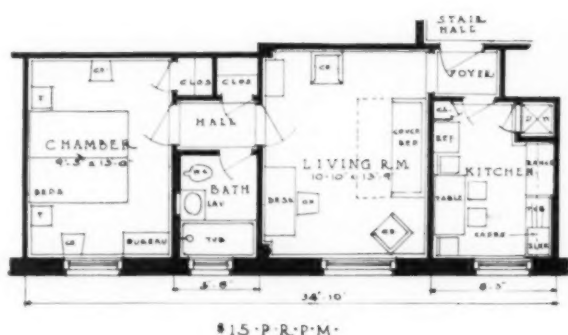
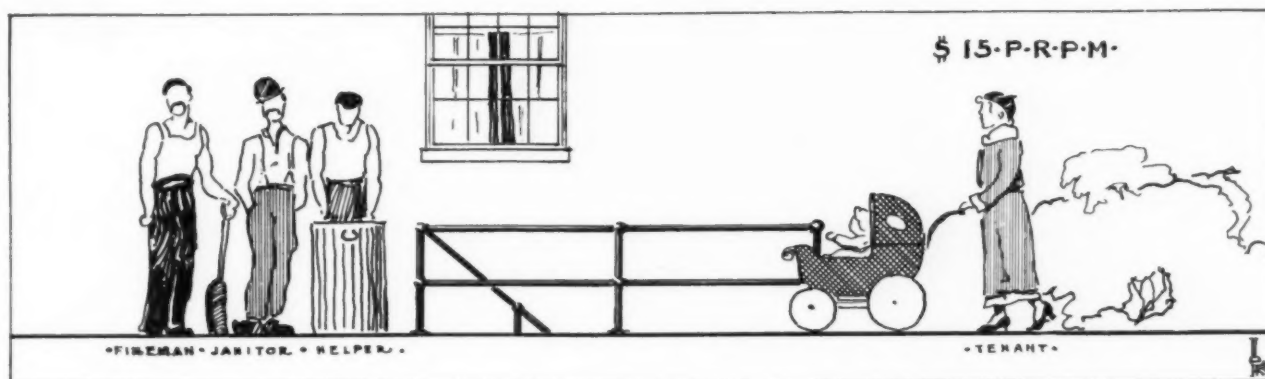
Our critical study of the minimum standard of American living must therefore be based on the way of life of people who are obliged, whether they like it or not, to deny themselves much as a result of inadequate wages. Such a study must scrutinize all phases of the make-up of the individual apartment and the operation of the building as a whole, with the service involved. To illustrate this point of approach, we present three pictures of life, entitled respectively, "\$100 per room per month," "\$15 per room per month," and "\$7 per room per month."

The first is a single room in an apartment hotel. Everything is compactly arranged for housekeeping on a very small scale. The beds are mounted on revolving doors and disappear into the wall so that during the daytime the apartment has the aspect of a living room. For dining purposes a folding table is used. The kitchenette contains a gas range, sink with running ice water, a refrigerator attached to a central cooling system, broom closet and cupboard space. In addition, the hotel furnishes a complete equipment of kitchen utensils, table linen, silver and soap. The bathroom is wainscoted in tile and has a shower over the tub with double curtains, a medicine cabinet and a towel rack. Shower curtains are furnished and laundered by the hotel, and all face towels, bath towels, bath mats, soap and toilet paper are included in the rental. All bed linen, table runners,

furnishings, carpets and stationery are supplied. Servicing this apartment is a large staff representing twelve types of service. In fact, all that the tenant need bring with him on moving into the premises is a suitcase and a bag of golf sticks. The construction cost of a unit of this type is necessarily high and the maintenance very extravagant, and it is not surprising that a big rental is charged. This type of dwelling has nothing to do with the solution of the housing problem. It is presented because it approaches an ultimate ideal of life in which the tenant does nothing for himself, and has his entire time free for the pursuit of objects other than housekeeping. Although this picture is never consciously in the minds of those who are undertaking housing projects, it probably has a subconscious influence against which we must be on our guard, inasmuch as the manifold service it affords represents the ideal of life of so many people, both rich and poor.

The second apartment shown is in a walk-up building. It is rented unfurnished, but nevertheless receives a variety of service. Heat and hot water are furnished, as well as garbage removal by way of the dumb-waiters. Refrigeration from a central system is also furnished at a small additional cost.

Although there is no dining room, the kitchen is sufficiently large, so that a small dining table and chairs can be used. In the kitchen cabinets there is ample room for the storage of grocery, supplies and a measurable amount of china and glassware. The walls of the apartment are painted and the



(2) WALK-UP APARTMENT AT \$15 PER ROOM PER MONTH. This type of apartment is rented unfurnished. It receives, however, a variety of services—heat and hot water, garbage removal, central refrigeration, basement storage and laundry facilities. The construction includes items such as kitchen cabinets, painted walls, varnished wood flooring and terrazzo bath flooring, shower fixture, medicine cabinet and utility closets, all of which must be included in the rental. This layout represents living on a modest scale, but incomes below \$50 a week cannot be reached.

flooring throughout is varnished wood, except in the bathroom where terrazzo is used. Bathroom fixtures include a shower over the tub and a medicine cabinet. There is a closet in the bedroom as well as one for hats, coats and general storage purposes. In addition to the apartment itself, the tenant has the use of storerooms in the basement, the laundry and rooms for perambulators. There are also certain general rooms for social purposes in connection with the project. If the tenant of this apartment pays \$15 per room per month, his salary should be at least \$50 a week. The entire picture of the equipment and service afforded in this case is commensurate with the means and demands of those who earn between \$50 and \$75 a week. There is no marked extravagance in this layout; it represents living on a modest scale.

In our attempts to eliminate all except the absolutely essential in living, we find that even in the comparatively modest mode of life for which this apartment affords opportunity, there is much that can be eliminated. The third apartment is an attempt to picture a set-up under which we may hope to achieve as low a rental as \$7 per room per month.

On examining the plans of the second and third example, the question arises at once: how can we hope to rent No. 3 at \$7 per room per month when No. 2 requires a \$15 rental? The answer does not lie entirely with the construction of the building; a lower land value has been presumed for No. 3. In general, however, No. 3 lends itself to an extremely simple form of plan, whereas No. 2

is somewhat complicated. It will also be noted that in No. 2 the apartment has a girder length of 34' 10" whereas in No. 3 it is 30' 6". This is due to a narrower bathroom and kitchen, the dining space of No. 2 being eliminated in No. 3. The girder length of the kitchen and bathroom in No. 2 is 13' 11" whereas in No. 3 it is reduced to 9' 2". No. 3 eliminates one plumbing stack.

The economies possible in No. 3 are of two kinds: (a) those relating to the make-up of the apartment itself, and (b) those pertaining to service and general equipment of the building.

Let us examine somewhat more in detail what has been done in No. 3 as compared with No. 2.

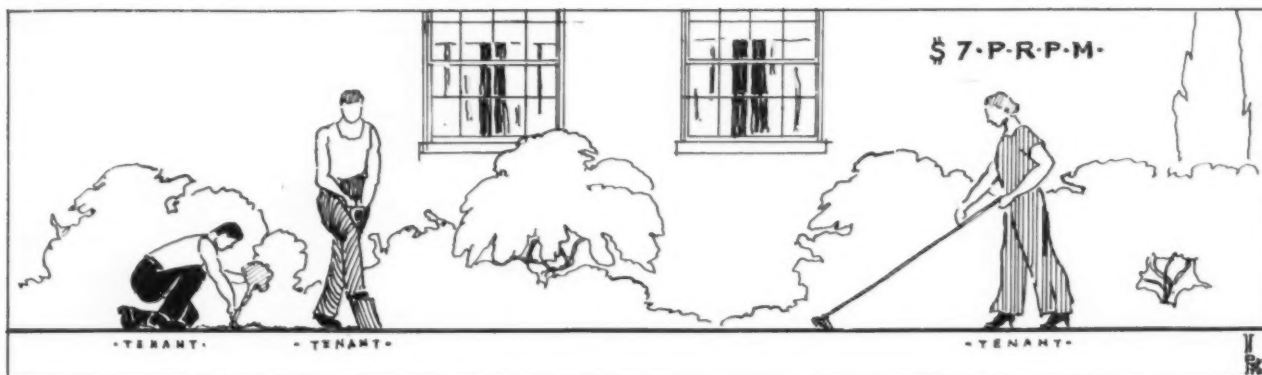
ELEMENTS OF INDIVIDUAL APARTMENTS

Bedrooms

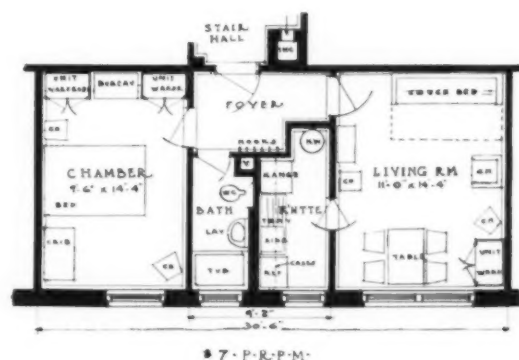
The bedroom in No. 3 is 9' 6" by 14' 4" instead of 9' 5½" by 13' 0". Although it is larger, space must be taken out of it for the unit wardrobes which replace closets.

Living Room

Again the room in No. 3 is somewhat larger, being 1" wider and 7" longer. This room has three purposes: it serves as a living room and dining room, and in most instances will be used as a bedroom as well. The first consideration for a family of small means is furnishing the members of the family with sleeping accommodations of proper privacy and in a minimum number of rooms. It



(3) DE-SERVICED APARTMENT AT \$7 PER ROOM PER MONTH. In this type of apartment all except the absolutely essential in living standards has been eliminated, and a lower land cost has been assumed. The living room serves also as dining space. The kitchen is condensed, but adequate. Cold air is utilized for refrigeration of foods during the winter months. A small tub is used in the bathroom and the medicine cabinet is omitted. All closets are eliminated. Hot water is supplied by individual heaters at the expense of the tenant. Vented gas steam radiators, also paid for by the tenant, supply heat. Economical beam and girder spans and concrete floors are used in the construction. Large pipes and dumb-waiters are eliminated. Storage and laundry facilities are provided on the roof.



is all very well to say that a living room should not be used as a sleeping room, but we know perfectly well that it will be so used; even the kitchen is likely to be used for sleeping purposes if that is possible, as it is in No. 2. If we do not wish a room used for sleeping purposes it must be planned so that it cannot be so used. This is one of the considerations which have led to the reduction of the kitchen. All other rooms must be planned definitely with sleeping accommodations in view. Hence the couch bed and the portable wardrobe shown on the plan.

In apartment No. 3 the use of concrete floors is contemplated instead of wood floors. Of course this is not so agreeable, and if the rental is in the competitive range many people will not accept this compromise. It means considerable saving, however, in first cost and some saving in maintenance. Concrete floors in apartments are by no means a new feature; at least thirty years ago Mr. Ernest Flagg used them in apartments in New York.

It will be noted that the dining table is of small dimensions. It can nevertheless accommodate five or six people if necessary, and when not in use for dining purposes it will afford a place for reading, study or games.

Bathroom

In the bathroom concrete is used again instead of an applied floor of terrazzo or tile. This room is narrow; a 44" tub is used instead of a 60" tub, and no shower or shower curtains are provided.

The medicine cabinet is also omitted. It may be said that the small tub is somewhat uncomfortable. This is quite true, but it must be remembered that our object is to establish a minimum of decency rather than a maximum of comfort. Sixteen inches added to the girder length of the building for every bathroom would be expensive. It will be noted that in the arrangement of the kitchen and bathroom all fixtures are closely grouped, so that supply lines and branch waste and soil pipes will be simple and short. An entire plumbing stack is saved.

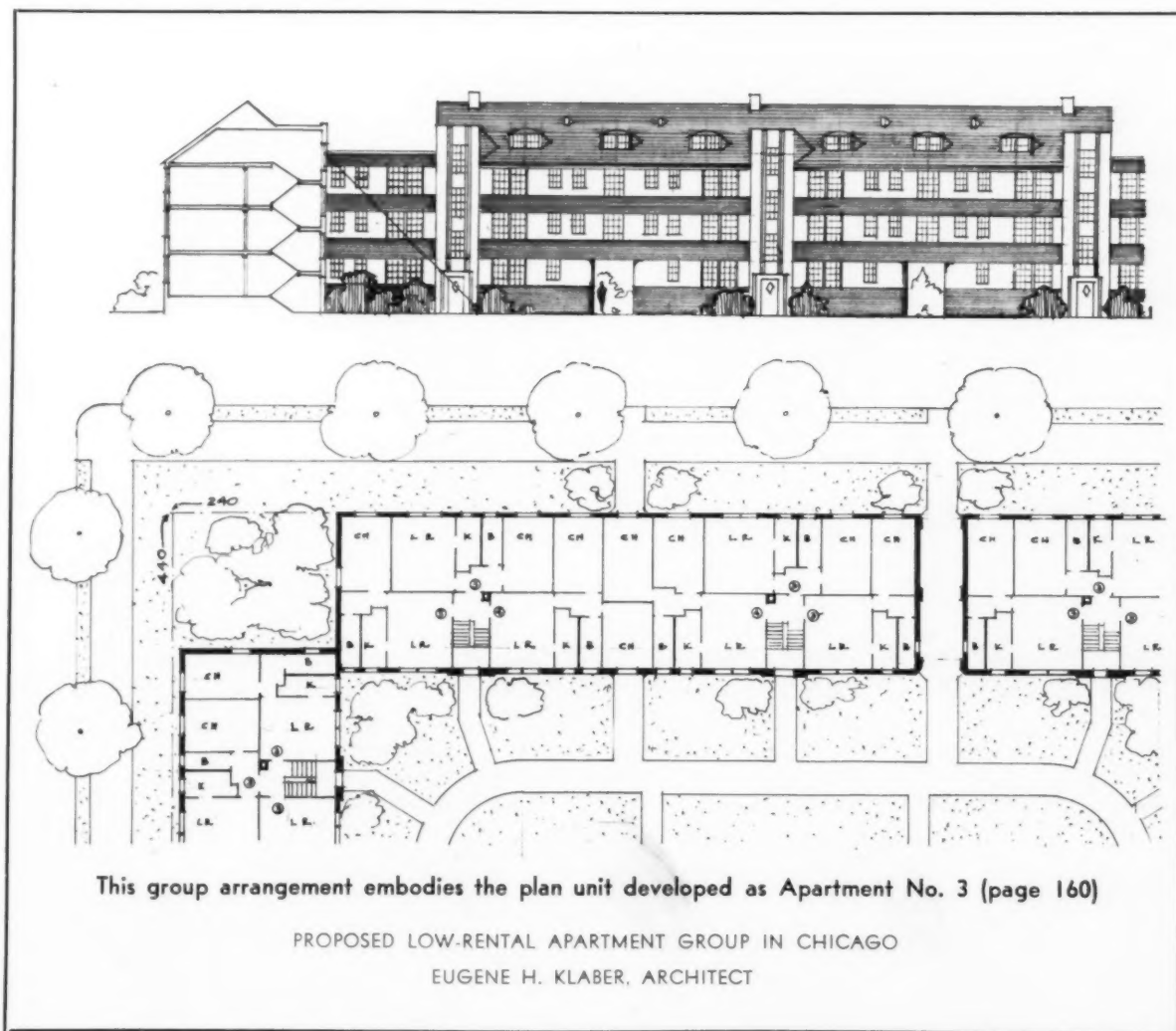
Kitchen

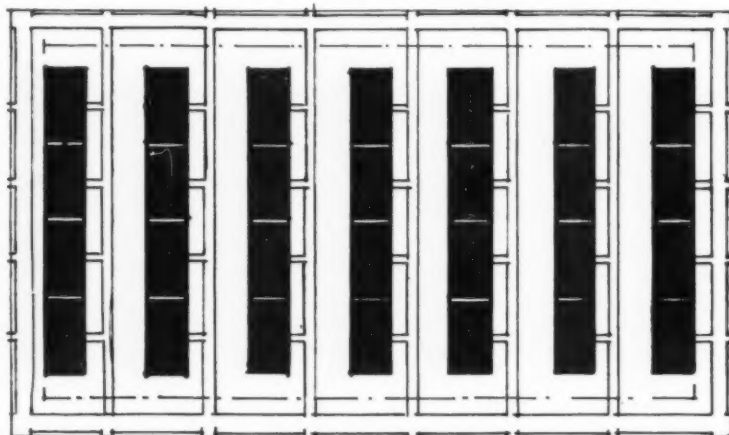
The kitchen in No. 3 is very condensed. The dining space is omitted. Cabinet space is more restricted than in No. 2. Instead of a cabinet gas range, a small range with ovens below the gas burners is used for the sake of space saving. Some will make the objection that this is an inadequate kitchen arrangement and a hardship on the housekeeper. If so, look at the kitchen in the hundred-dollar apartment, in which, as we know from experience, excellent meals can be prepared, and then compare either of these with the so-called service pantries prevalent in New York City. It is maintained that this kitchen is entirely adequate, especially for the use of people of small means. The range is less convenient than the cabinet range used in No. 2, but it is less expensive and occupies less room. No extended cabinet space is required because poor people have few dishes. The refrigerator is small, inasmuch as the buying of food is

from day to day. In this instance it is placed next to the outside wall with the idea of using air circulation ducts, which during seven months of the year will permit the cooling of foods with the external air without the use of any ice. This obliges the tenant to take ice only during the summer months when the danger of spoiling perishable foods is great. A combination sink and tub is provided, so that laundry work can be done in the apartment. Hot water is produced by an individual heater at the expense of the tenant. Not only does this mean the elimination of the enormous waste that occurs when the landlord furnishes the hot water, a waste for which the tenant must eventually pay, but it also involves an extremely simple system of small dimension supply pipes. In this combination of kitchen and bathroom the only necessary supply risers are the gas riser and the cold water line. One of the objections that is raised to this type of kitchen is that it would be undesirable for certain racial groups who lay great stress on their cooking, and would not be content with so restricted a layout. Here arises the question, to what extent are the habits of racial groups altered by circumstances? Certainly no nation has

a stronger tradition of cooking than the Germans. Nevertheless, in one of the most recent housing developments at Spandau, Berlin, they have in many instances adopted not only the American kitchenette but also the so-called "strip kitchenette," in which the cooking appliances are inclosed behind closet doors which are opened when cooking is being done.

In the third apartment heating is also paid for by the tenant, who uses vented gas steam radiators. In a large-scale operation, this installation of heating and plumbing is far less expensive than a centralized system, and the cost of operation to the tenant, with reasonable economy on his part, can be reduced to the point, where he pays less to the gas company than he would be obliged to pay his landlord for furnishing him with heat and hot water. With such an installation no costly boiler room, stacks, pipe tunnels, circulating pumps, heat controls and pipe covering are needed. Consider further that a main use of the basements of most apartment houses is to permit the passage of steam pipes and water lines with proper pitch. A system such as the one indicated here would permit the elimination of a large portion of the basement.

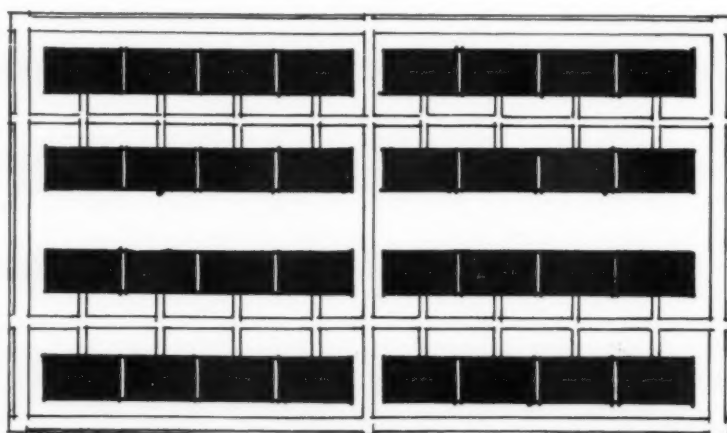




A.

252 Apartments
756 Rooms
40.3% Coverage

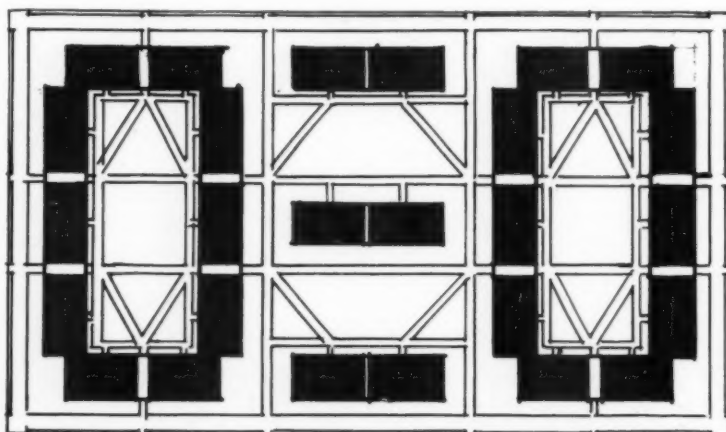
@ \$1.50	@ \$.75	Cost of land
630	315	Cost per apartment
210	105	Cost per room



B.

288 Apartments
864 Rooms
49% Coverage

@ \$1.50	@ \$.75	Cost of land
552	276	Cost per apartment
184	92	Cost per room



C.

234 Apartments
750 Rooms
40.3% Coverage

@ \$1.50	@ \$.75	Cost of land
680	340	Cost per apartment
210	105	Cost per room

BLOCK STUDIES BY EUGENE H. KLABER, ARCHITECT

These block studies are based on the same size block (240 feet by 460 feet to building line) as used in preceding article by Henry Wright.

Closets

All closets have been eliminated in No. 3. A rack with hooks is attached to the wall in the hall and in the sleeping rooms portable wardrobes are used. Closets are an expensive element to install. They involve partition work, plastering, many corners, trim, door, casing, hardware and finish. Unit wardrobes can unquestionably be produced in large quantities and furnished the tenant for a smaller cost. They have the advantage of being movable and placed in relation to the furniture. In planning, it is frequently found that where closets are provided for every room it is necessary to increase the area of the plan, and have a complicated layout.

ELEMENTS OF COMMON SERVICE

Heating and Plumbing

We have discussed the simplification possible by eliminating large dimension pipes, pipe covering, pumps, etc. If the basement is omitted there is a further saving in floor drains. In flat country, where the sewer mains in the streets are likely to be near the surface, any need for sewage ejectors is eliminated. In addition to the initial cost of the heating and hot-water systems, there is the cost of fuel and of engineers and firemen to be considered. Heating of stair halls has also been omitted. It is not essential that in cold weather people leave their apartment prepared for the outdoor temperature; witness the open-stair tenements.

Delivery; Dumb-waiters

The cost of delivery assumes added complications as we go upward in the financial scale. In apartment No. 2 dumb-waiters are provided for delivery of goods and the removal of waste. The latter involves janitor service. The tenant in No. 2 will frequently send home purchases from downtown stores. In addition to the cost of the dumb-waiters there is the problem of access at the bottom. This means tortuous corridors in the basement, partition work and toilet rooms for delivery men. The

tenant of apartment No. 3 is strictly a cash-and-carry buyer. Her funds are limited, she must get the maximum for every cent that she spends, and above all, she wants to see what she is buying and to be assured of its quality. She knows that ordering groceries over the 'phone is expensive, and she knows that delivery of goods costs money which she must pay.

In apartment No. 2 the dumb-waiters have a special rack for garbage pails and collections are made two or three times a day. This is costly service. In No. 3 the tenant carries waste matter to the hopper of the incinerator stack in the stair hall. This system is not free from possible objections: carelessness can create a messy condition and failure to close the hopper door will admit odors into the hall. With care it can be quite satisfactory, as in the Amalgamated Clothing Workers' groups in New York.

Laundry and Storage Facilities

Although the tenants are not largely endowed with goods, some storage space must be provided. They must also be afforded an opportunity for doing more laundry work than is possible within the restricted kitchens. How are we to provide for these if the basement is eliminated? Roof or penthouse space meets this problem. Its cost is far less than cellar space. It is true that for storage, it means some additional inconvenience. For laundries, however, it is almost ideal inasmuch as an open portion of the roof adjacent to a laundry affords excellent means of open-air drying. How cumbersome is the arrangement so frequently seen in New York apartments, where the laundry must be hauled down three or four flights for washing, and then lifted up six flights to the roof for drying.

The considerations presented in this article indicate the direction that our study of the detailed planning of housing must now take. We must go into a much more careful analysis of the actual life of those who will occupy the building in order that on the physical side of the problem we can hope to obtain the utmost simplification and the smallest cost.



PROPOSED APARTMENTS IN CHICAGO
EUGENE H. KLABER, ARCHITECT



Garden apartments for City and Suburban Homes Co., Brooklyn, N. Y. Andrew J. Thomas, architect.



Garden apartments of low cost, Bridgeport, Conn. R. Clipston Sturgis, architect.



Faculty apartments, Ithaca, N. Y. Frederick Ackerman, architect.



Garden apartments, East 158th St., New York City. Andrew J. Thomas, architect.

GARDEN APARTMENTS

Pre-War Model Tenements and Community Planning: Cottage Flats by Toronto Housing Company.

1918-1919

War Housing Projects: Bridgeport, Newport News, Chester, Newburgh (2- and 3-story twin apartments and 4-story apartments with two suites per stair).

1920-1923

Application of smaller types at Ithaca, N. Y., and St. Louis; Development of Garden Apartment at Jackson Heights, Long Island and South Brooklyn.

1923-1931

Metropolitan Insurance Company Apartments, Long Island; J. D. Rockefeller, Jr., Apartments at Bayonne, Bronx, Harlem; City and Suburban Homes, Brooklyn project; Sunnyside Apartments, Long Island; New York Housing Board apartments in the Bronx, Brooklyn and East Side of New York; Radburn and Phipps Apartments; Marshall Field and Julius Rosenwald apartments in Chicago.

CHRONOLOGY OF

GROUP ROW HOUSES

Pre-War (especially 1915-17) Industrial Housing Schemes: Middle West, Boston, Philadelphia, Forest Hills, L. I.

1918-1919

War Housing Projects: Yorkship, Bridgeport, Chester. Development of group rowhouses separately and combined with flats.

1920-1923

Various proposed schemes for industrial housing: Standard Oil; American Car and Foundry; Shelton, Conn.

1923-1931

Community schemes employing group row dwellings: Mariemont, Ohio; Sunnyside Gardens, Long Island; Arbor Close at Forest Hills; Harvard Graduate Students' Houses in Cambridge; Radburn, New Jersey; Buhl Foundation Housing Project, Pittsburgh.

HOUSING PROJECTS



Row Housing, Forest Hills, L. I. Wilson Eyre, architect.



Bridgeport, Connecticut, rowhouses. R. Clipston Sturgis, architect.



Group Housing, St. Martins, Philadelphia. Edmund B. Gilchrist, architect.



Buhl Foundation Project. Ingham and Boyd, architects. Stein and Wright, consultants.

HOW LARGE SCALE HOUSING PROJECTS ARE DEVELOPED

It is desirable that all investigations and decisions in regard to the general need, character, form and size of a housing project should be developed *before* rather than *after* a site has been selected. When steps are taken in advance, technical advice should be secured and property, wherever possible, should be optioned rather than purchased.

General Study

Surveys and brief technical studies should be made to determine the desirable character, kind and probable cost of development on either a sales or rental basis. Analysis should establish probable cost or rentals in relation to income of expected tenancy.

Suitability for intended purpose, adaptability of shape, size, topography and orientation of site or sites, either as optioned or to be selected, should be studied.

Preliminary Planning

A series of rough test plans should be made in order to avoid the early adoption of either fixed assumptions or definite plan forms. These may or may not be checked by actual estimates, but should be tabulated or in some cases shown graphically to bring out relative importance of variable factors.

Preliminary study should also develop an approximate program of sequence of construction and completion, in relation to seasonal working conditions, preferable time of sale or rental, and relative carrying charges accruing from completion of work before time necessary to accomplish these objectives. If both site and building work are required, the sequence and relationship between site and building contracts are particularly important.

Finished Plans

Actual working plans may be required during the period of study, particularly for site development, to meet the schedule outlined. A judicious balance should always be maintained between too rigid a development of original outline sketches and too great a departure to disturb economic factors either in building cost or operation.

Bids are to be taken and checked against all assumptions; any required changes should then be made, or if advisable, the project completely changed or abandoned.

Construction Program

Land option should be taken up unless previously done.

Records of assumed cost factors, as well as complete itemized subcontracts and other costs, should be set up in relation to accounting of actual costs as work proceeds: (a) to build up a reliable source of future information for architects and others concerned; (b) to check against assumed costs and prevent unfortunate surprises at the time of final accounting which so frequently not only cause embarrassment to owners but reflection on the "practicability" of the architect and other technicians.

Preparing for Operation

Whether project is to be sold or rented, preparation must be made during the period of construction for publicity, operation, organization, sale or rental schedules, etc. Here the architect can be useful outside of his usually recognized field if with proper preparation he is able to assist in what is often an intricate and difficult problem: that of allocating the total anticipated charges or receipts so as to assure an orderly and complete disposal of the project conforming to the sequence of its advantageous completion. Even a plan composed of a few typical repetitive units presents a wide variation in desirability of various locations within the project.

Uniform Cost Accounting

There is no field in which it is more important to build up complete and, so far as possible, uniform cost information. Even in most large cities the problem of large-scale building on a basis of real technical efficiency is relatively new and untried. To develop a technique in any manner comparable to that which has been evolved in England and on the continent under government large-scale housing requires the utmost cooperation on the part of the independent agencies, whether private or public, which are likely to undertake development in this field. A scientific and accurate basis of accounting and comparative costs must be developed in all fields of construction and operation. The architect is probably the one most fitted to lead in the former, and he cannot intelligently conduct his services of design without an intelligent understanding and continual comprehension of the latter. In other words, the architect must act as a combined analyst and designer at every stage of his direct participation, taking advantage of every other possible contact to check his own work against the multifarious and complicated factors which enter into the successful design and operation of large-scale housing developments.



Gottscho

INTERIOR COURT OF CELTIC PARK APARTMENTS
CITY AND SUBURBAN HOMES COMPANY, LONG ISLAND CITY
ERNEST FLAGG, ARCHITECT

PORTFOLIO OF
APARTMENT
HOUSES

MARCH
1932

ARCHITECTS WHOSE WORK IS ILLUSTRATED IN THIS
ANNUAL PORTFOLIO OF APARTMENTS INCLUDE:

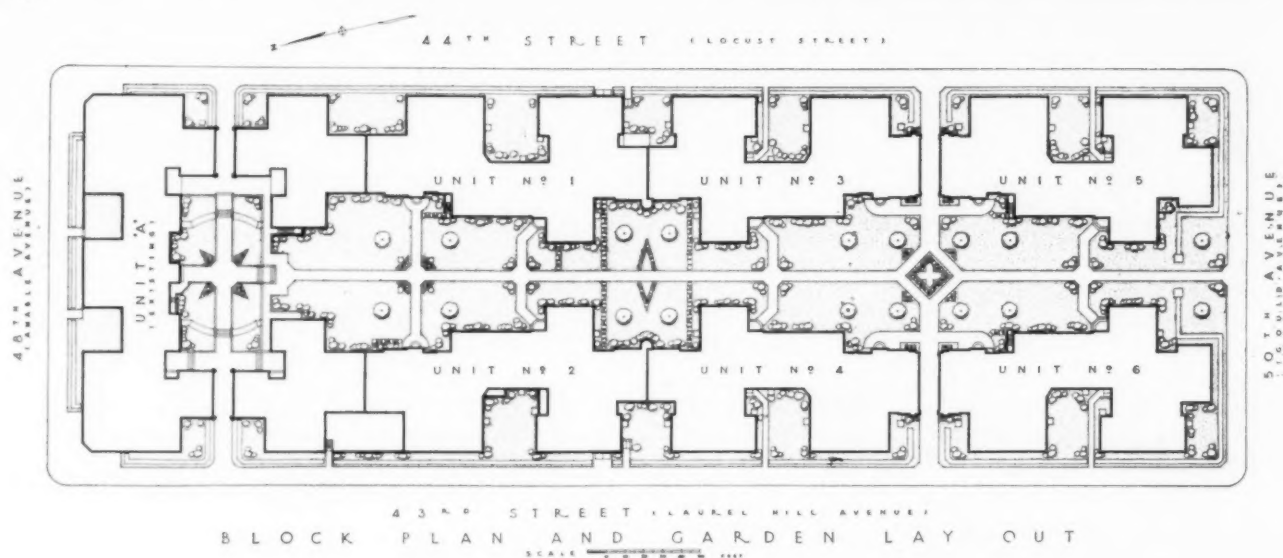
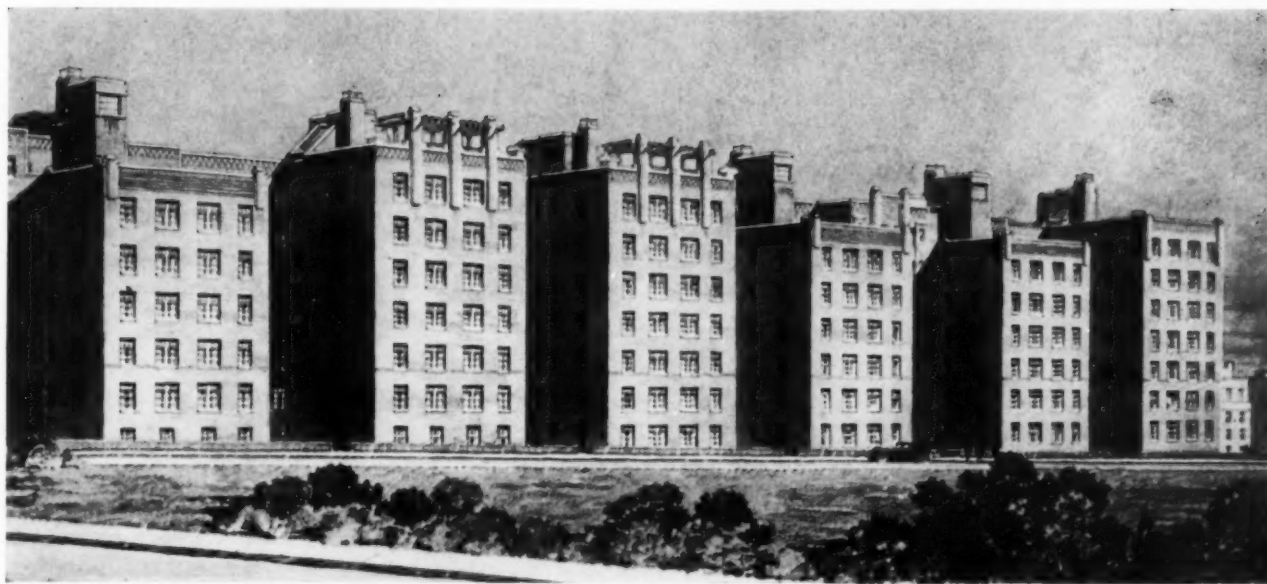
ERNEST FLAGG; SPRINGSTEEN AND GOLDHAMMER;
ANDREW J. THOMAS; BLEY AND LYMAN; HOULI-
HAN, HAUSER AND MARKS; SUKERT AND CORDNER;
R. C. REAMER; PHILIP B. MAHER; HOLABIRD AND
ROOT; GARBER AND WOODWARD; GEORGE FRED
KECK; THIELBAR AND FUGARD; EDWARD B. GREEN
AND SON; ALBERT HART HOPKINS; IRWIN S.
CHANIN; BORIS W. DORFMAN; HOWE AND
LESCAZE, AND CLAUSS AND DAUB.



Gottscho



CELTIC PARK APARTMENTS, LONG ISLAND CITY
CITY AND SUBURBAN HOMES COMPANY
ERNEST FLAGG, ARCHITECT OF UNIT "A"



Typical floor plan of Units 1-6. The floor plan of Unit "A", already built, is illustrated on opposite page.



CELTIC PARK APARTMENTS, LONG ISLAND CITY
CITY AND SUBURBAN HOMES COMPANY
SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS



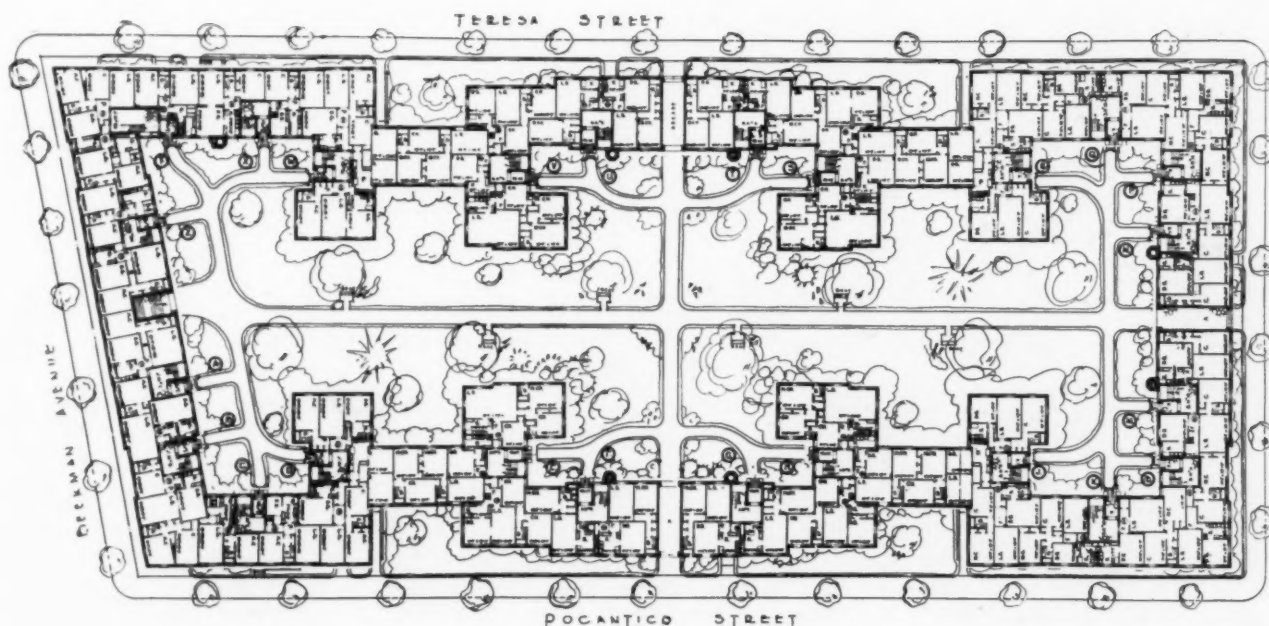
Van Anda

VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

This building comprises 241 apartments. There are entrances from all four streets into the garden court. The construction is fireproof, with steel beams and concrete arches.



Van Anda



The site measures 520 by 226 feet. In the center is a private park, 400 by 150 feet, which assures an abundance of light and air for the apartments.

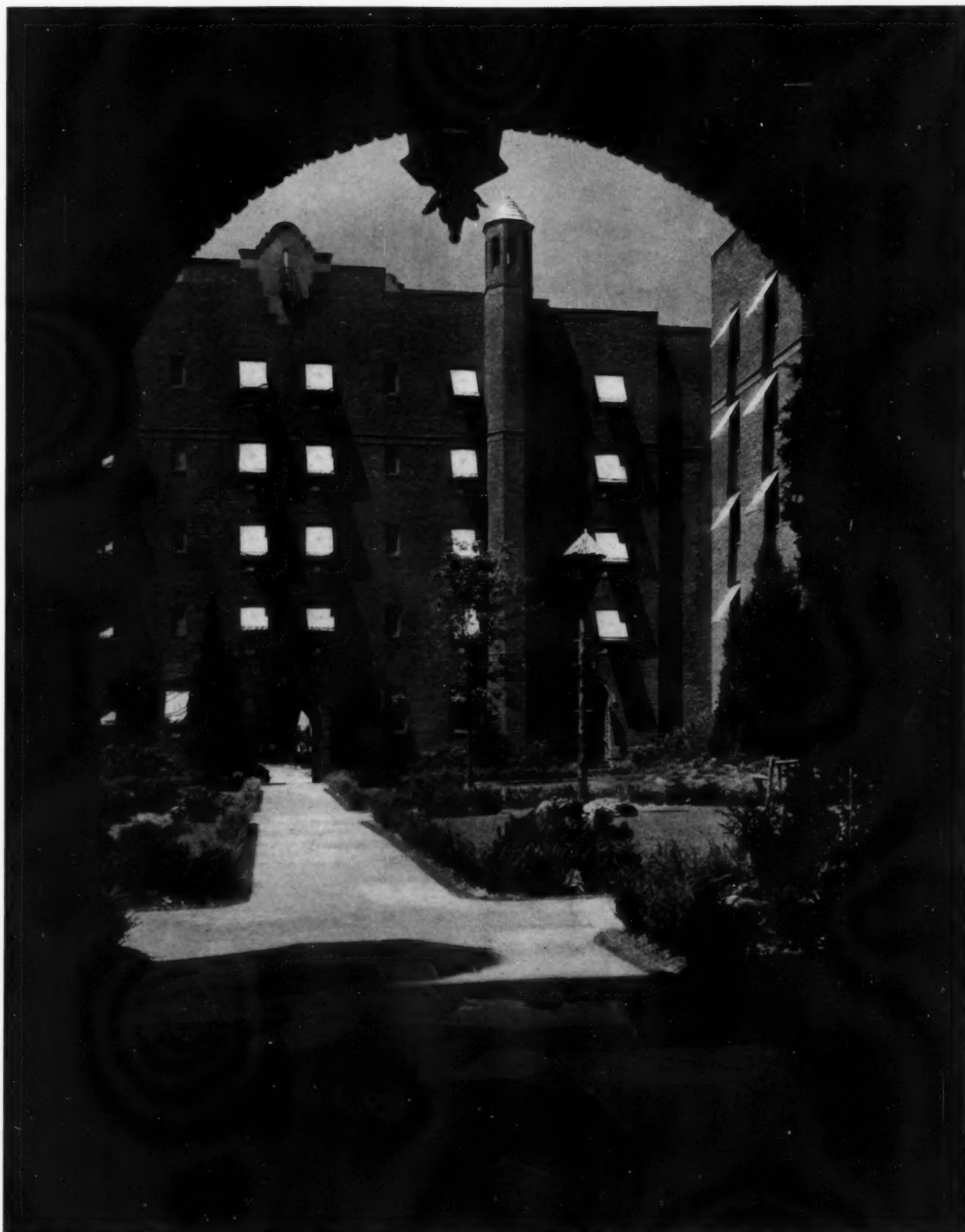
VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT



Van Anda

VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

All apartments are arranged to obtain cross-ventilation. In the basement is an auditorium, with kitchen and service available to tenants for meetings, receptions, dances and other entertainments.



Van Anda

Special rooms are provided for the storage of baby carriages, sleds and velocipedes. A large garage and a fully equipped children's playground are on the opposite side of an adjoining street.

VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT



Van Anda

VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

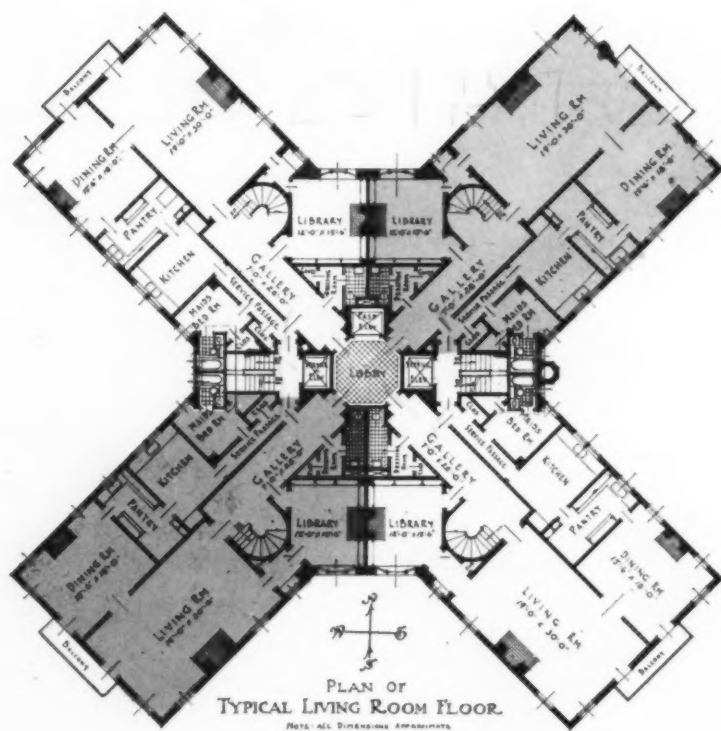
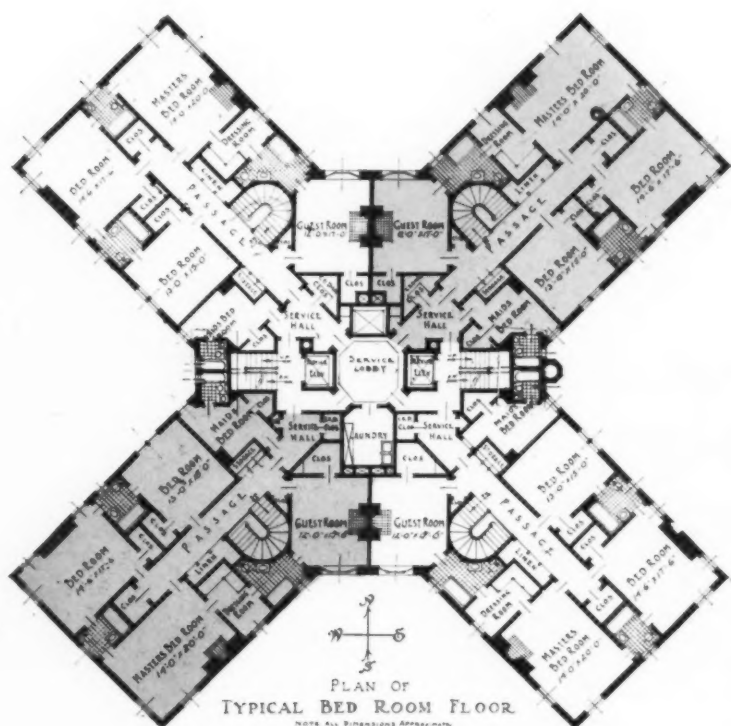
The building is on a cooperative basis. Each tenant subscribes for a certain minimum amount of stock according to the size of his apartment.



Schaefer

Duplex apartments, each occupying two floors of an entire wing, comprise the greater part of this building.

800 WEST FERRY STREET
BUFFALO, NEW YORK
BLEY AND LYMAN, ARCHITECTS



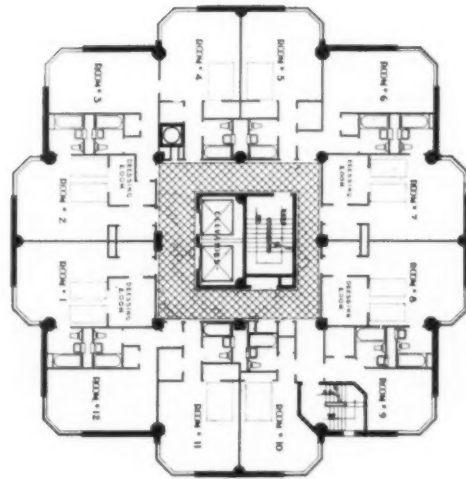
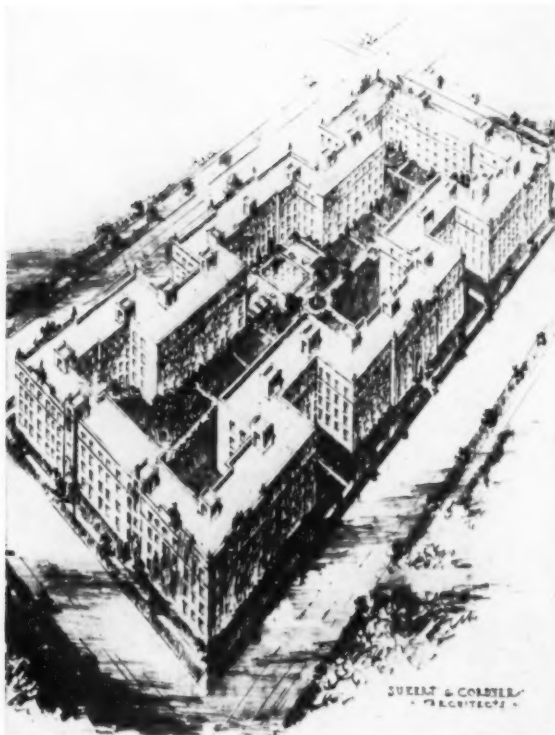
800 WEST FERRY STREET
BUFFALO, NEW YORK
BLEY AND LYMAN, ARCHITECTS



Hornby and Freiberg

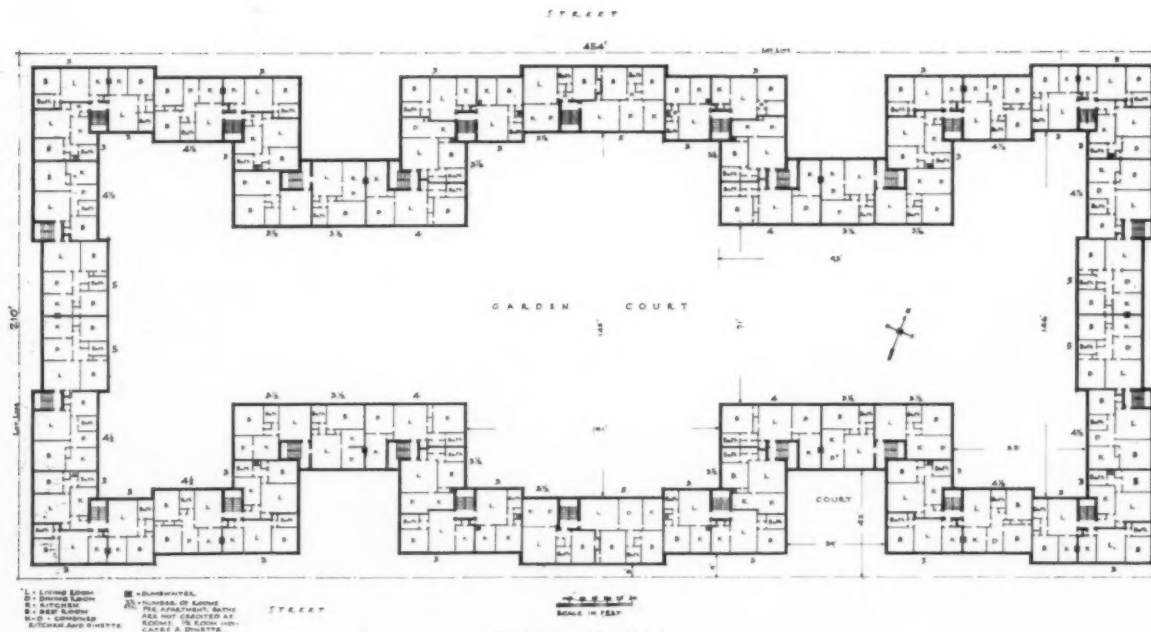


APARTMENT BUILDING AT OAK PARK, ILLINOIS
HOULIHAN, HAUSER AND MARKS, ARCHITECTS



TYPICAL FLOOR PLAN
(Elevation on opposite page)

HOTEL EDMOND MEANY
SEATTLE, WASHINGTON
R. C. REAMER, ARCHITECT



TYPICAL FLOOR PLAN
PROPOSED GARDEN APARTMENT FOR WORKERS

PROPOSED GARDEN APARTMENT IN DETROIT
MICHIGAN HOUSING ASSOCIATION
SUKERT AND CORDNER, ARCHITECTS

This apartment project is intended for cooperative ownership rather than rental occupancy. Children's playgrounds will be provided in the garden court.



Vaughn

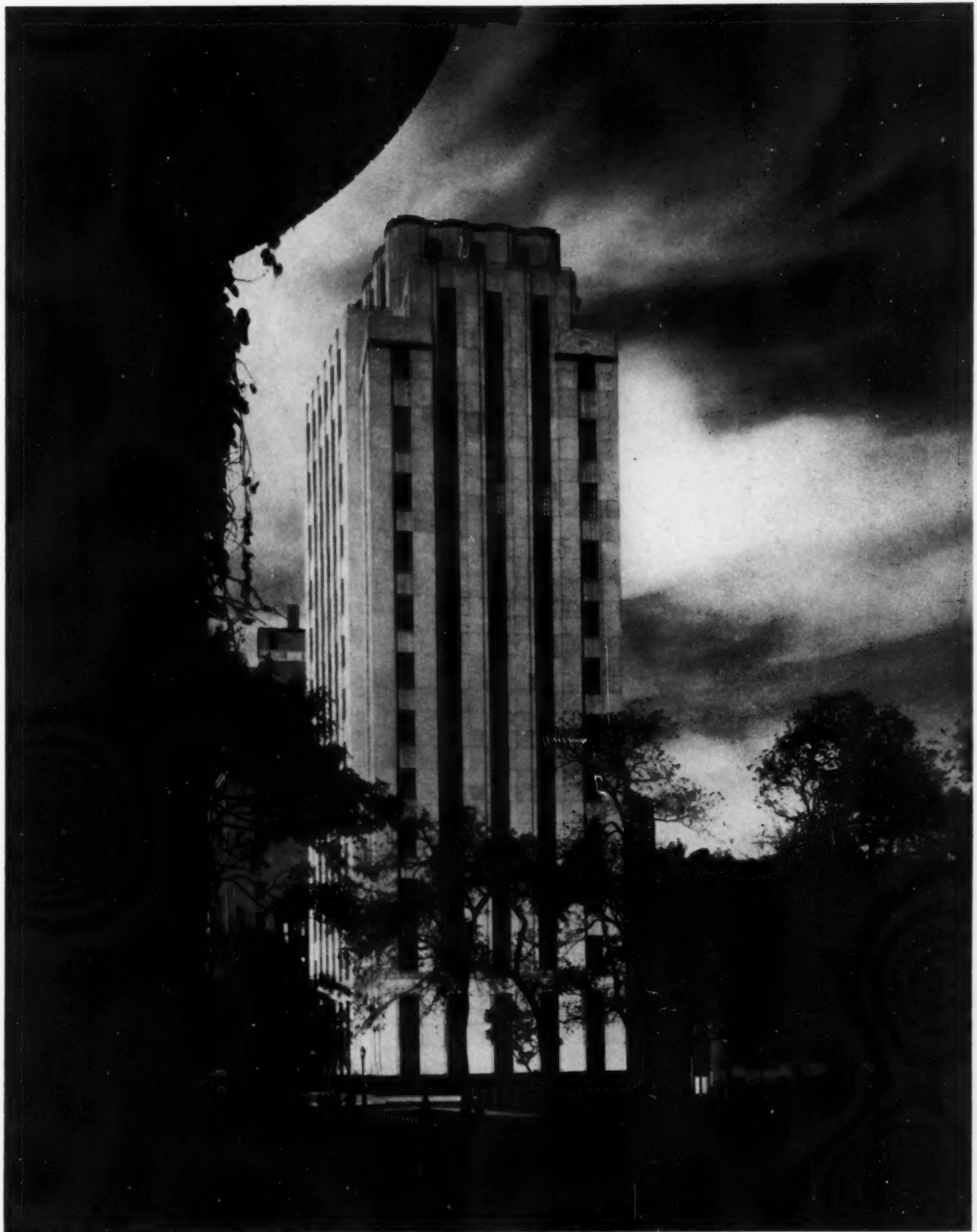
Corrugated concrete walls. Base of black granite. In addition to hotel services there are 156 guest rooms and a 6-room penthouse suite.

HOTEL EDMOND MEANY
SEATTLE, WASHINGTON
R. C. REAMER, ARCHITECT



Hedrich-Blessing

1301 ASTOR STREET APARTMENTS
CHICAGO, ILLINOIS
PHILIP B. MAHER, ARCHITECT



Hedrich-Blessing

1301 ASTOR STREET APARTMENTS
CHICAGO, ILLINOIS
PHILIP B. MAHER, ARCHITECT



Hedrich-Blessing

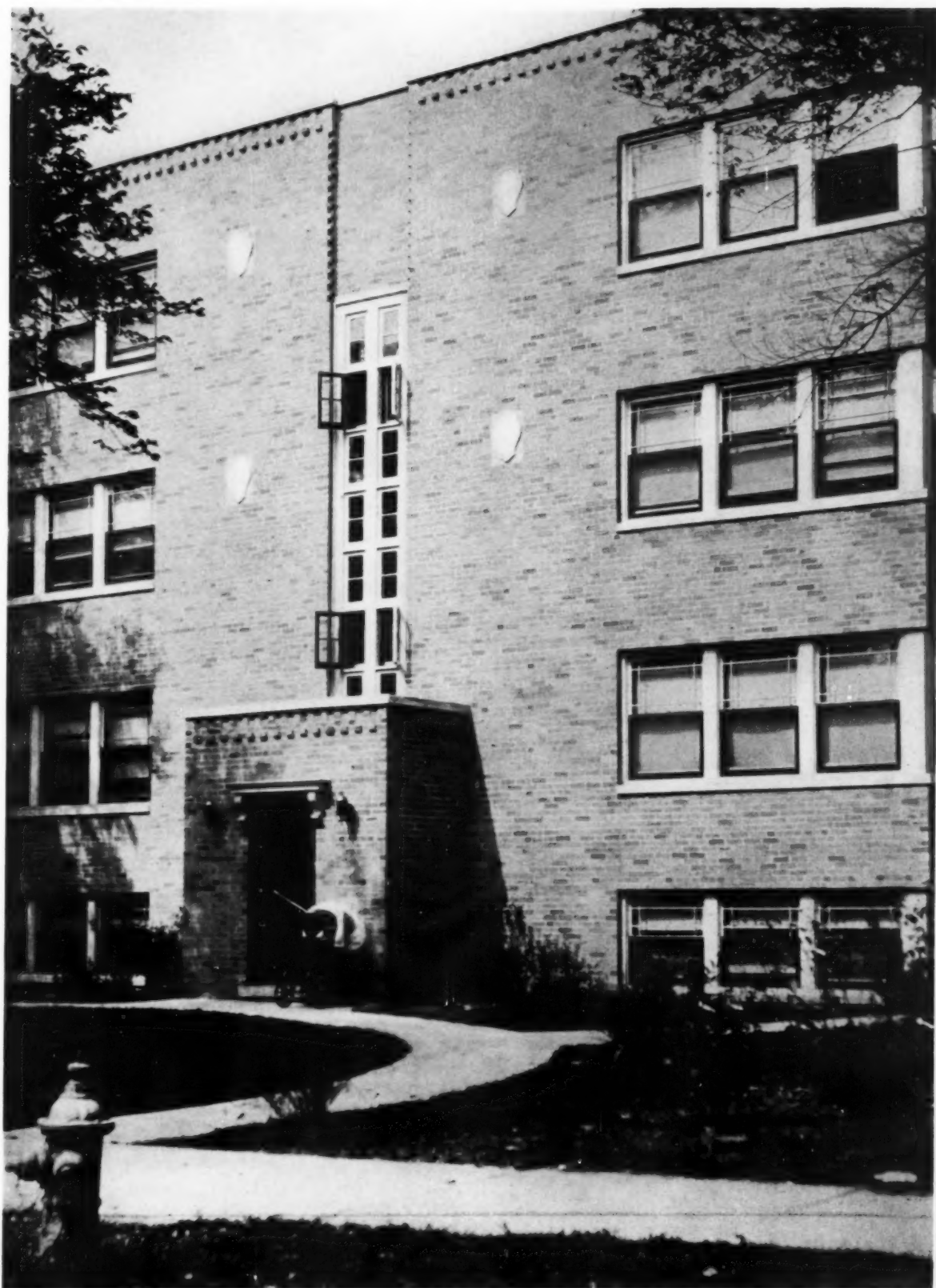
APARTMENT OF MR. JOHN ROOT
CHICAGO, ILLINOIS
HOLABIRD AND ROOT, ARCHITECTS



PHELPS APARTMENTS
CINCINNATI, OHIO
GARBER AND WOODWARD, ARCHITECTS

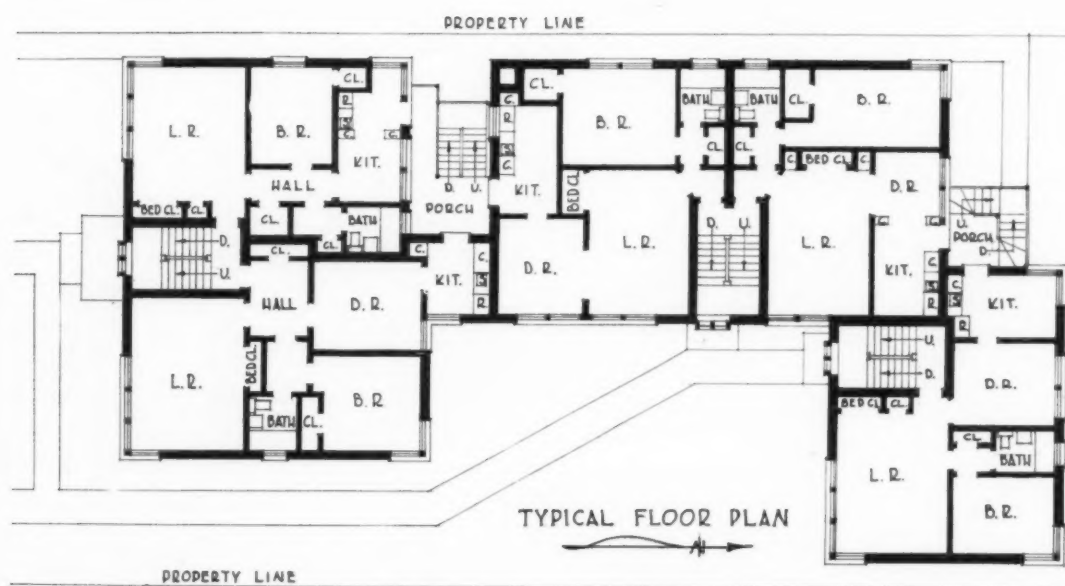


PHELPS APARTMENTS
 CINCINNATI, OHIO
 GARBER AND WOODWARD, ARCHITECTS



This building has 17 apartments of 3 and 4 rooms. Cost: 40 cents a cubic foot.

APARTMENT BUILDING
ELMHURST, ILLINOIS
GEORGE FRED KECK, ARCHITECT



APARTMENT BUILDING
ELMHURST, ILLINOIS
GEORGE FRED KECK, ARCHITECT



Kaufman and Fabry



Chicago Architectural Photographing Co.

This building combines both stores and apartments.

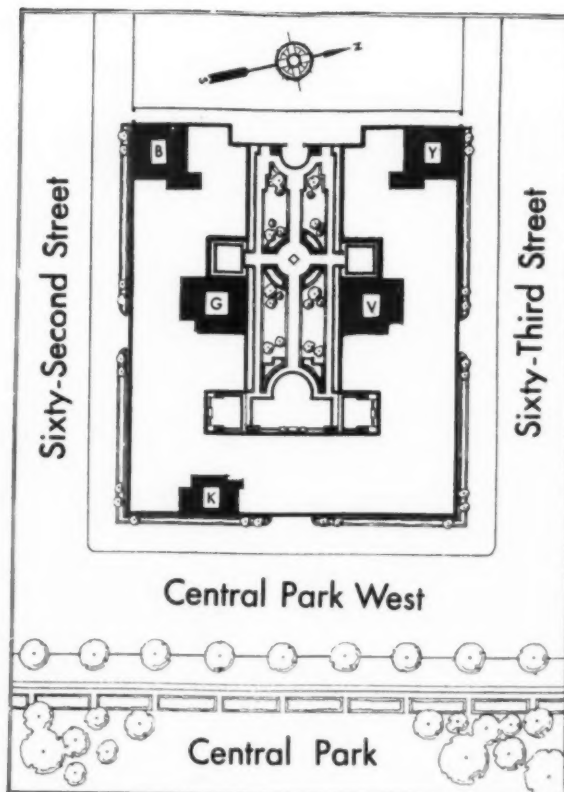
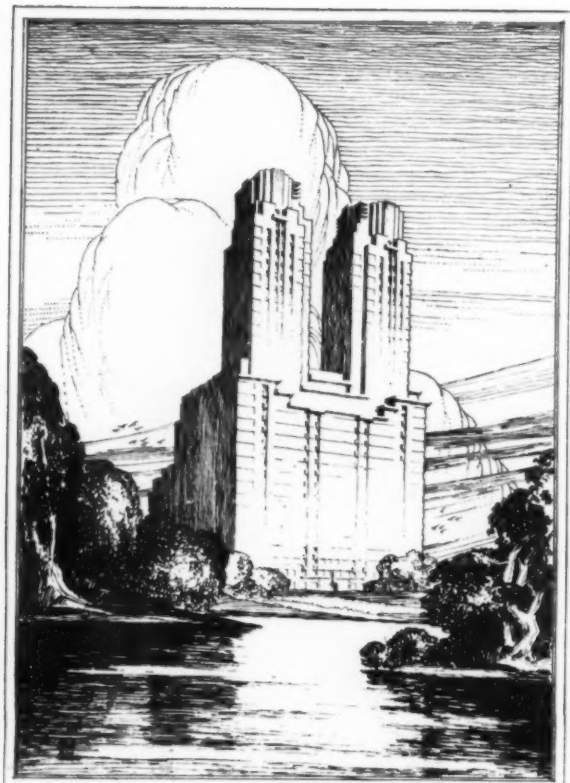
COLONNADE APARTMENTS
EVANSTON, ILLINOIS
THIELBAR AND FUGARD, ARCHITECTS



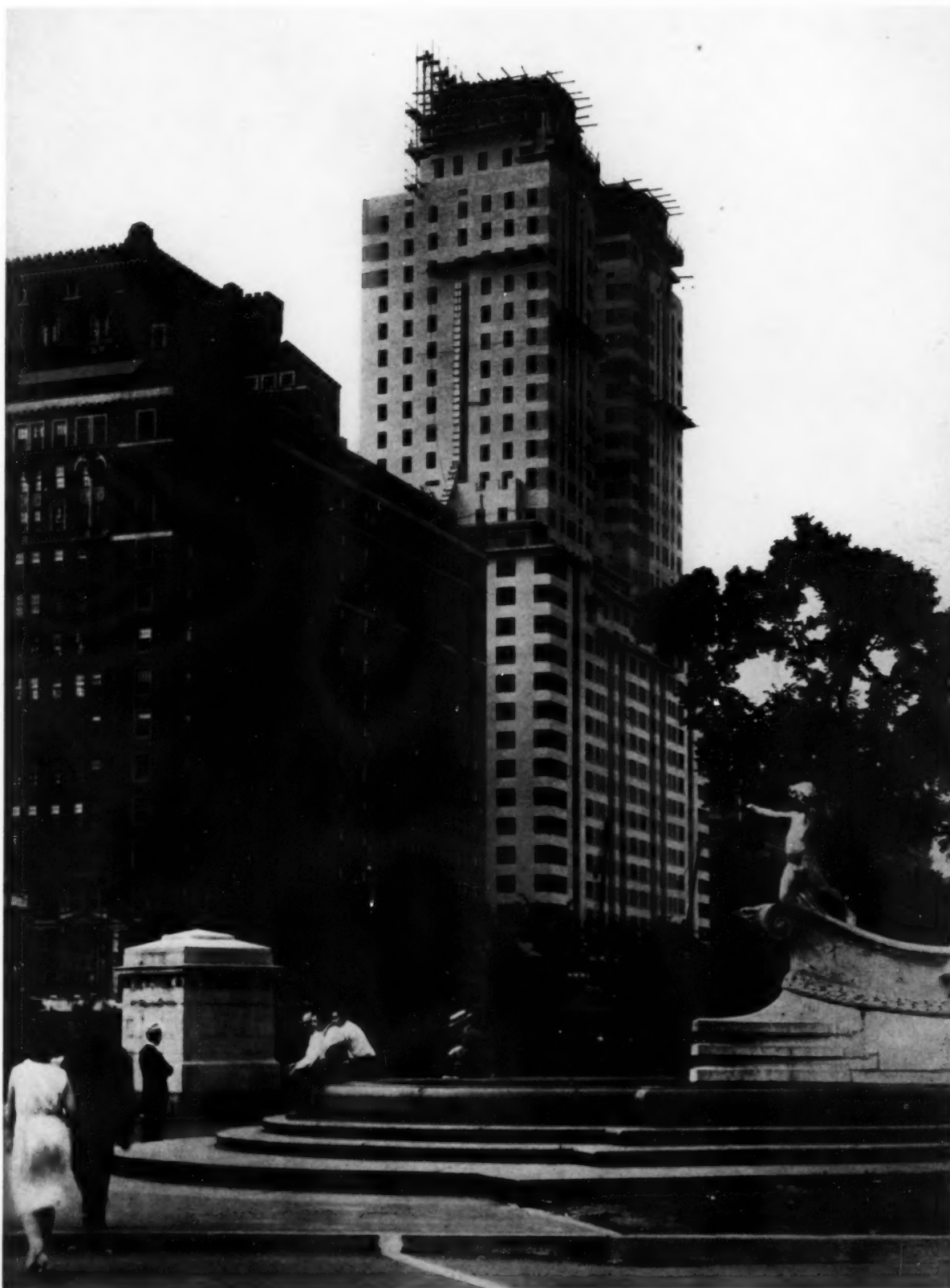
Gillies

Plan on opposite page.

MAYFAIR LANE, BUFFALO, NEW YORK
EDWARD B. GREEN AND SON,
ALBERT HART HOPKINS, ARCHITECTS



CENTURY APARTMENTS
NEW YORK CITY
IRWIN S. CHANIN, ARCHITECT



Galloway

CENTURY APARTMENTS
NEW YORK CITY
IRWIN S. CHANIN, ARCHITECT



Van Ande

55 WINTHROP STREET APARTMENTS
BROOKLYN, NEW YORK
BORIS W. DORFMAN, ARCHITECT

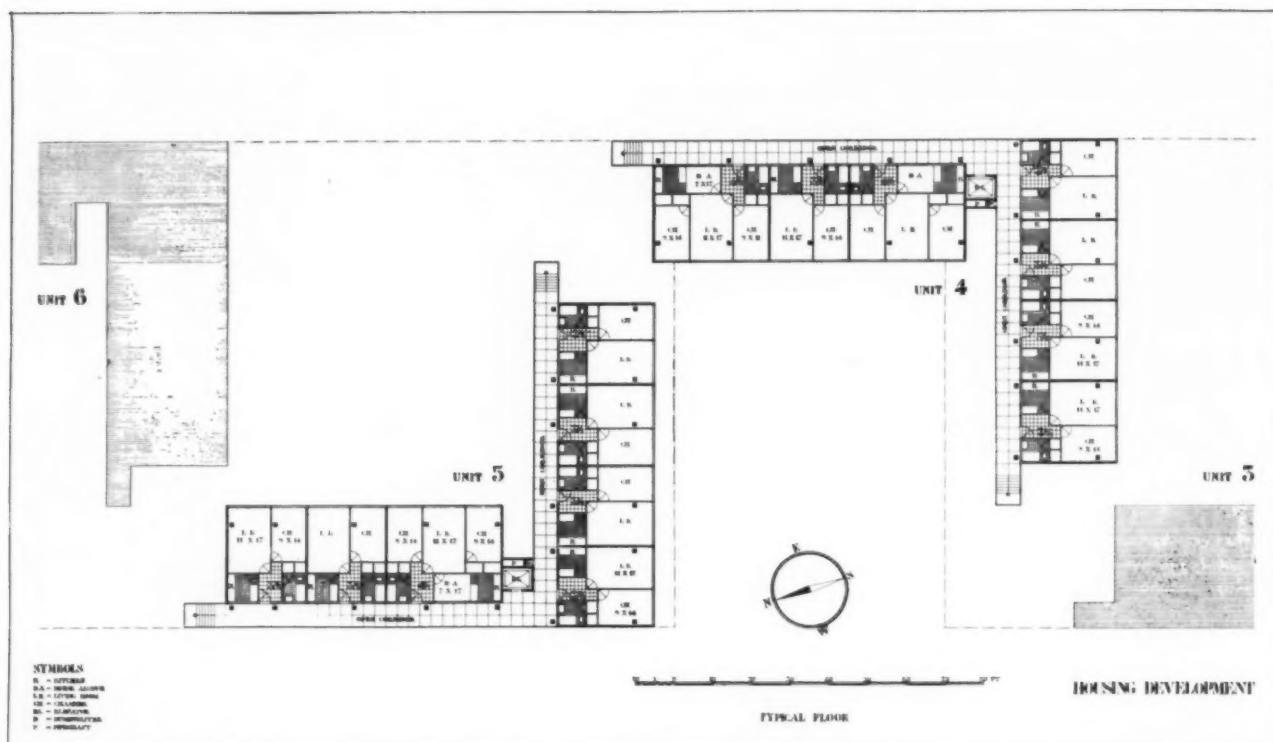
Façade of buff brick. Structural glass bricks are used for the entrance.



Van Anda

Entrance doors are made of ornamental iron enameled in color.

55 WINTHROP STREET APARTMENTS
BROOKLYN, NEW YORK
BORIS W. DORFMAN, ARCHITECT



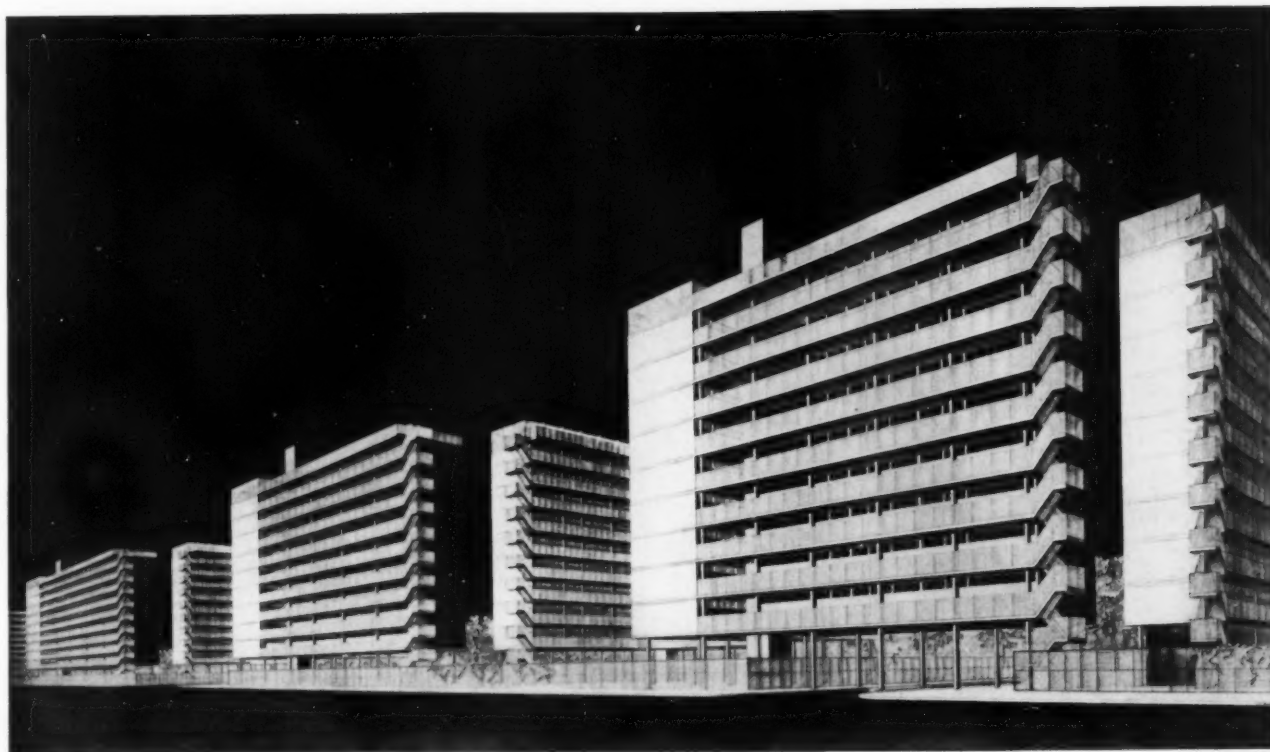
PROPOSED CHRYSTIE-FORSYTH HOUSING DEVELOPMENT FOR NEW YORK CITY
HOWE AND LESCAZE, ARCHITECTS

Total area comprises 7 city blocks. Five building units will bridge the intervening cross streets.
The "crank-shaft" arrangement of buildings allows sunlight to reach the playgrounds.



Elevations on preceding page.

55 WINTHROP STREET APARTMENTS
BROOKLYN, NEW YORK
BORIS W. DORFMAN, ARCHITECT



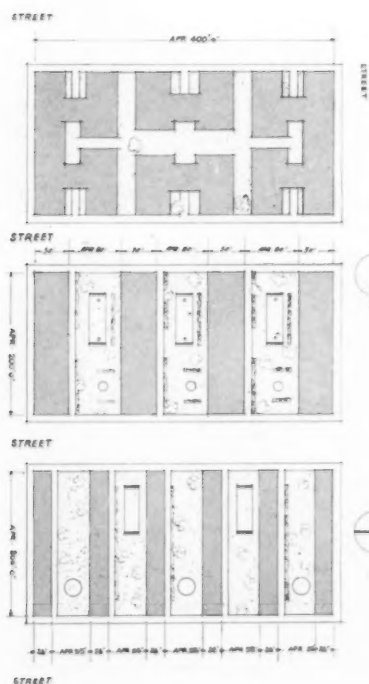
Bonner Studios

(Plan on opposite page.) Approximately 41 per cent of the park-playground is under the raised buildings which provide sheltered space for rainy days.

PROPOSED CHRYSTIE-FORSYTH APARTMENTS
NEW YORK CITY
HOWE AND LESCAZE, ARCHITECTS



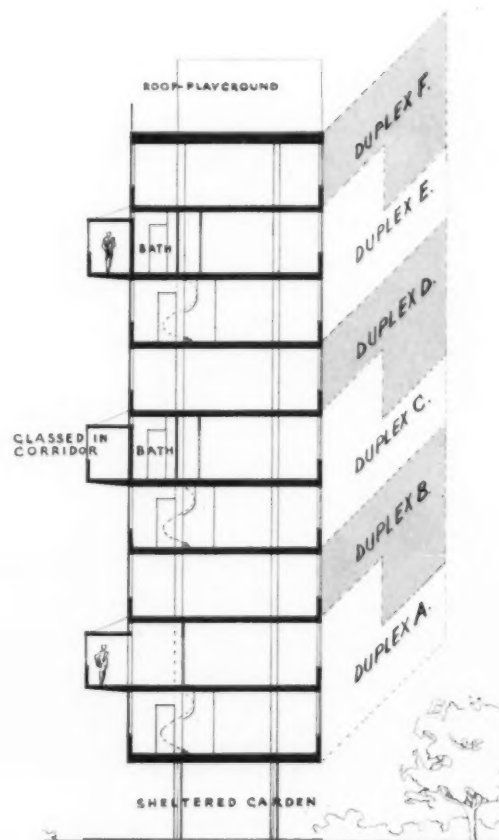
Perspective of proposed buildings for Long Island City.
(Plan Type 1).



TYPE 1
Block plan as
originally pro-
posed.

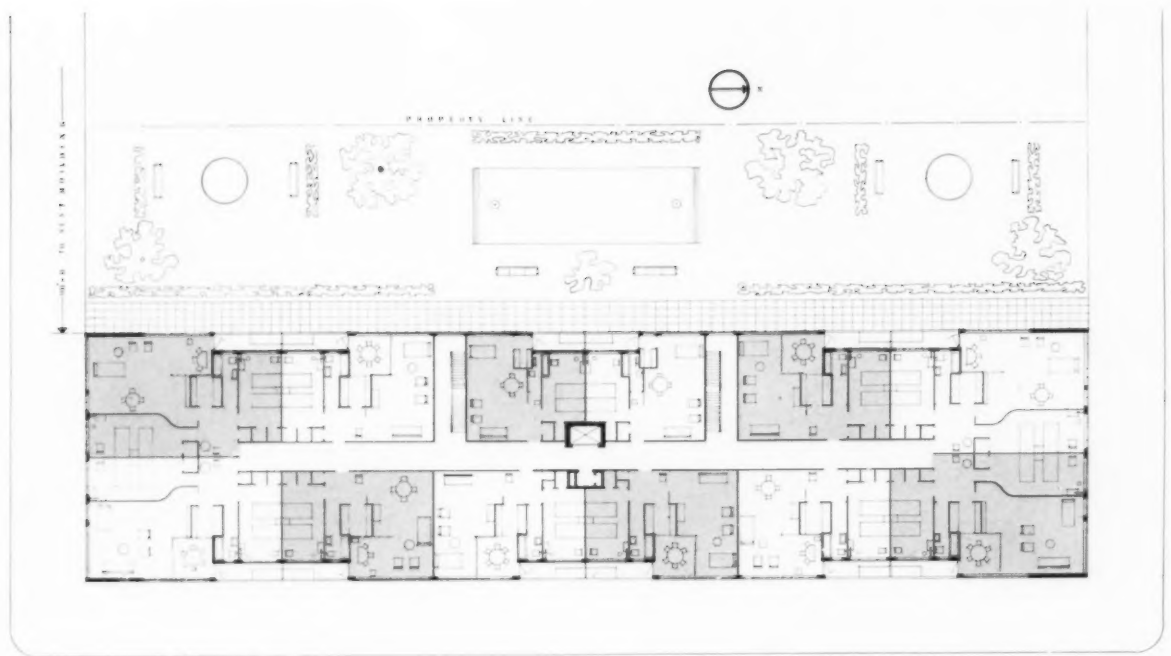
TYPE 2
Block plan of-
fering better
arrangement
of buildings.

TYPE 3
In this ar-
rangement all
apartments
receive the
same orienta-
tion. See plans
on opposite
page.



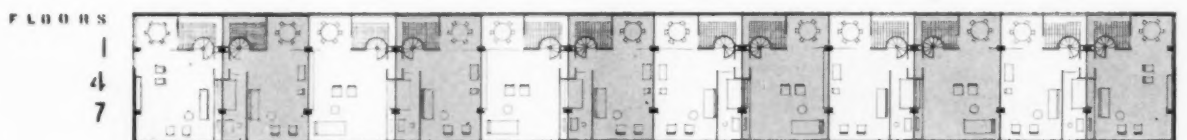
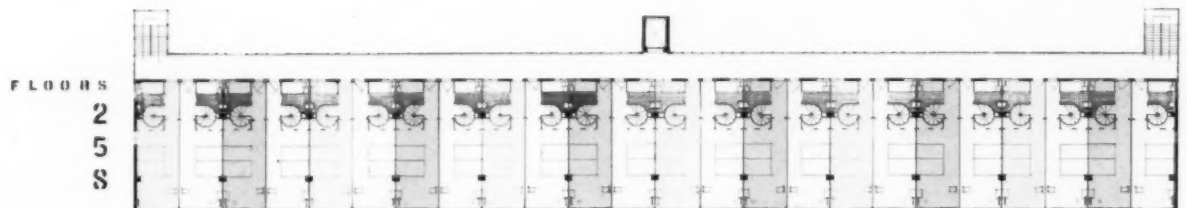
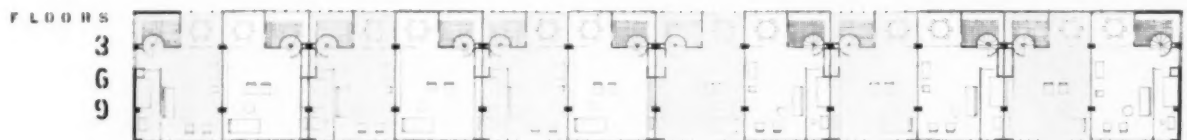
Isometric section showing arrangement of du-
plex apartments in Type 3. Each corridor takes
care of three floors of duplex apartments.

GARDEN APARTMENT SCHEMES
DEVELOPED BY
CLAUSS AND DAUB, ARCHITECTS



TYPE 2

STREET



TYPE 3



TWO APARTMENT SCHEMES
DEVELOPED BY
CLAUSS AND DAUB, ARCHITECTS



Nyholm and Lincoln

APARTMENT OF MR. ALFRED CLAUSS
LONG ISLAND CITY
CLAUSS AND DAUB, ARCHITECTS

Furniture of chromium-plated metal and white leather.

PRIZE-WINNING APARTMENTS IN NEW YORK



Guild

Awarded medal of honor for apartment on city plottage less than a block front.

120 EAST END AVENUE
NEW YORK CITY
CHARLES A. PLATT, ARCHITECT



Wurts Bros.

Awarded medal of honor for large-scale planning.

PHIPPS GARDEN APARTMENTS
LONG ISLAND CITY
CLARENCE S. STEIN, ARCHITECT



Wurts Bros.



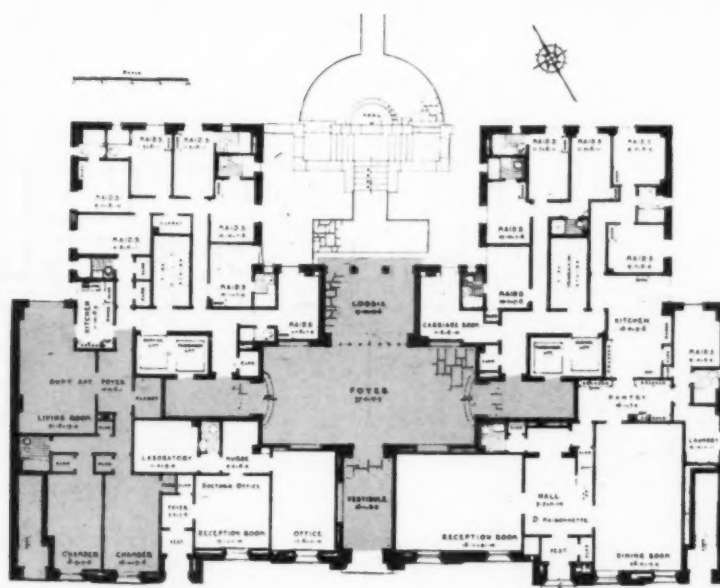
PHIPPS GARDEN APARTMENTS
LONG ISLAND CITY
CLARENCE S. STEIN, ARCHITECT

Honor award citation: "As an outstanding example of the social and economic value of openness of plan, permanent light and air and well-planned individual units at low rentals."



Awarded honorable mention for apartment
on city plottage less than a block front.

116 EAST 68TH STREET
NEW YORK CITY
ANDREW J. THOMAS, ARCHITECT



116 EAST 68TH STREET
NEW YORK CITY
ANDREW J. THOMAS, ARCHITECT

Honor award citation: "In this project two buildings are grouped on opposite sides of a small but well-treated rear yard."



Amemya

Awarded honorable mention for apartment on city plottage less than a block front.

400 EAST 57TH STREET, NEW YORK CITY
ROGER H. BULLARD, PHILIP L. GOODWIN,
KENNETH FRANZHEIM, ARCHITECTS

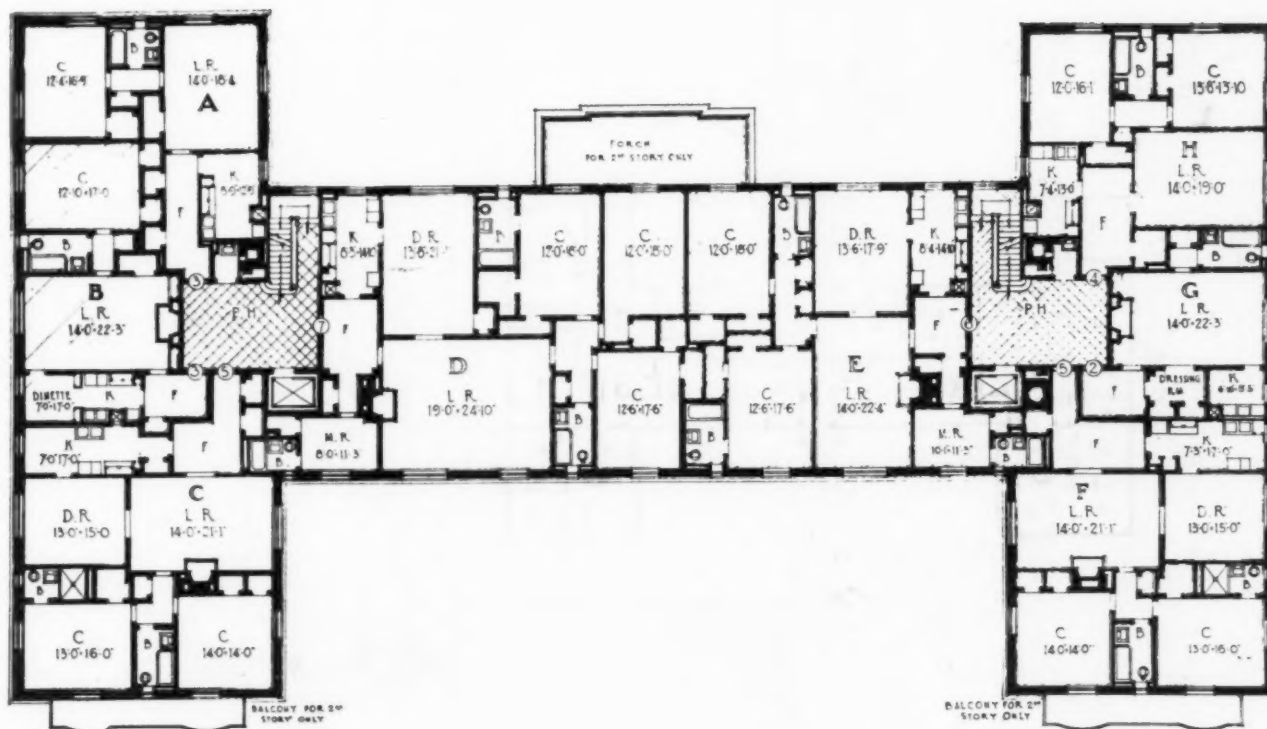


RIVER HOUSE, NEW YORK CITY
BOTTOMLEY, WAGNER AND WHITE, ARCHITECTS

Awarded honorable mention for apartment
of tower type.

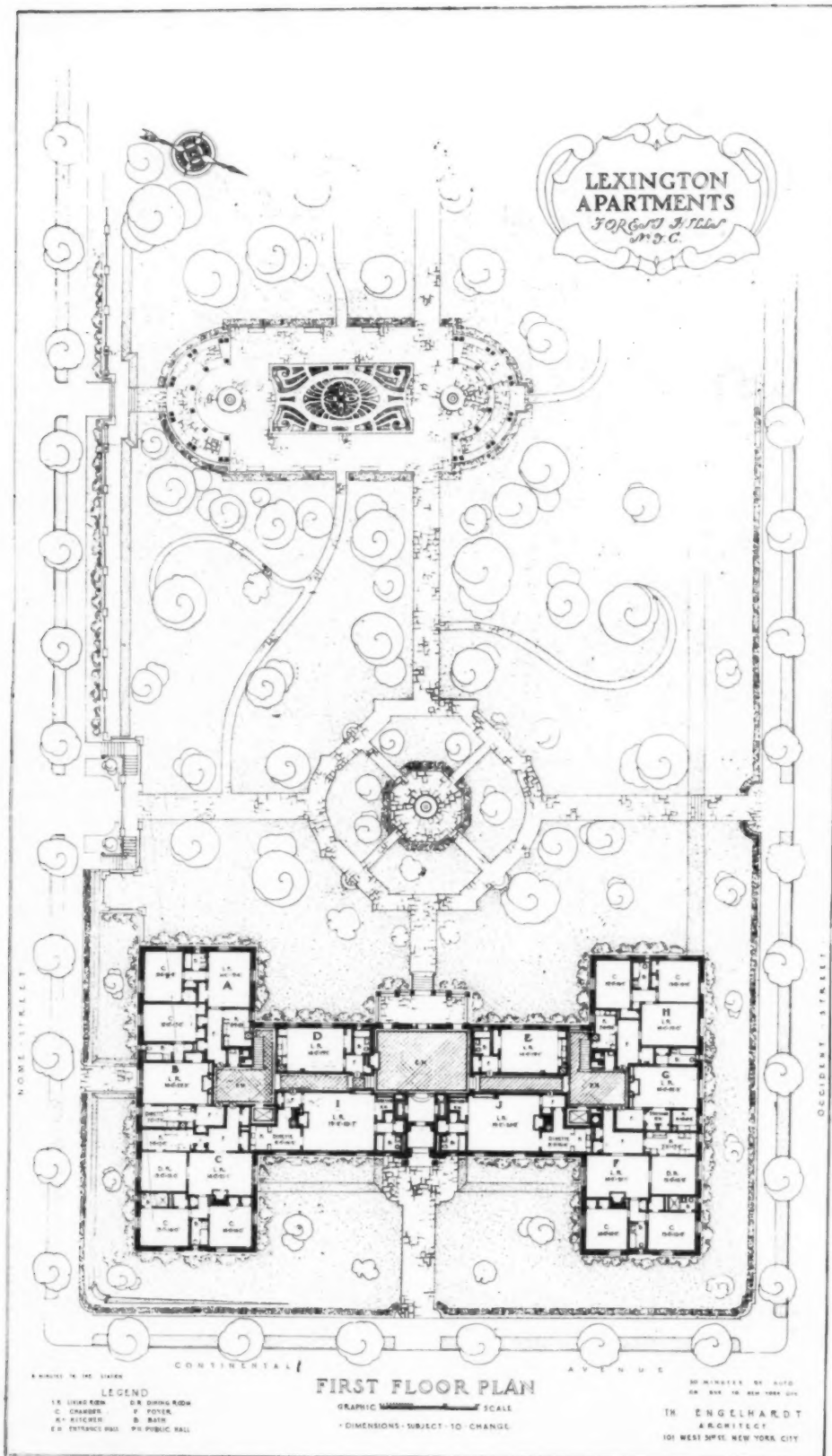


Barrios



Awarded honorable mention for apartment of suburban type.

LEXINGTON APARTMENTS
CORD MEYER DEVELOPMENT
FOREST HILLS, LONG ISLAND
TH. ENGELHARDT, ARCHITECT

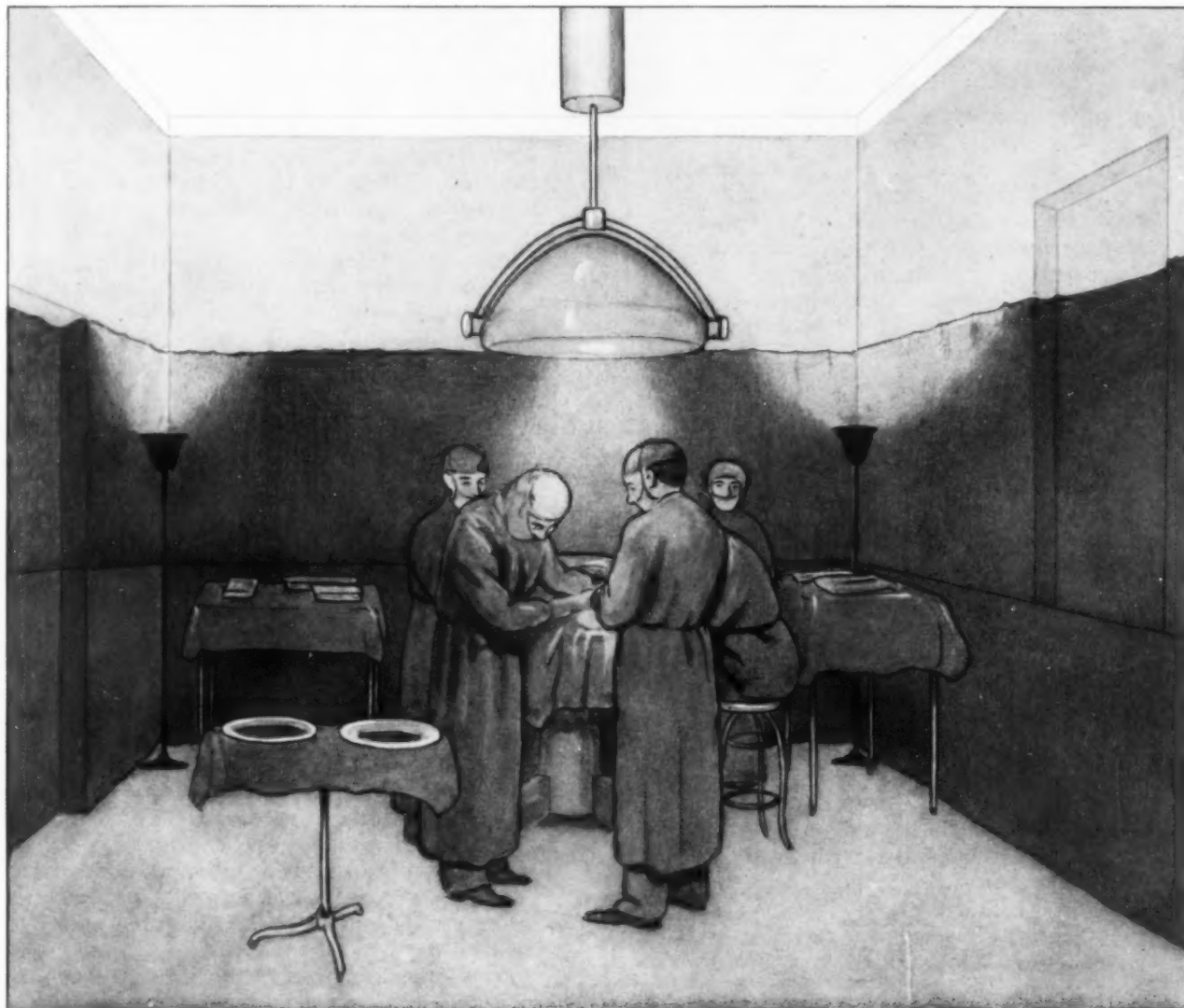


LEXINGTON APARTMENTS
CORD MEYER DEVELOPMENT
FOREST HILLS, LONG ISLAND
TH. ENGELHARDT, ARCHITECT

Honor award citation: "For excellence of plan and exterior design and the provision of adequate open space."

COLORS TO RELIEVE EYE STRAIN IN THE SURGICAL OPERATING THEATER

By J. EASTMAN SHEEHAN, M.D., Professor of Plastic Surgery, Post-Graduate Medical School, Columbia University



Rendering by Alfred Feinberg

The surgeon who is continuously engaged for any long period in a modern operating theater is likely to find himself, at the conclusion of the period, in a state of fatigue that is out of proportion to the mere labor, or even to the intensity of his preoccupation. This is primarily because of the eye strain produced by the artificial lighting contrivances with which the room is equipped.

What happens is, of course, that the pupils of the eyes adapt themselves automatically to the strength of the light, which they do so promptly and satisfactorily that one is quite unaware of what is happening. Vision calls for a certain volume of light, and the shutter opens or closes to admit just that much. In a dim light there is a wide opening; in strong sunlight a very small window suffices.

An operating room in the Doctors Hospital, New York City, in which, to relieve the glare of intense artificial light, Dr. Sheehan and Dr. P. J. Flagg have experimented with the use of colors. Eye fatigue, they have found, is eliminated by placing a filter of light yellow on the central lamp and by treating the walls in the primary colors of yellow and blue so that they absorb rather than reflect the glare.

Whenever the contraction, if extreme, must be maintained over a long period (as sometimes in the operating theater) and the small delicate muscles which control the shutter are held at tension, there is strain upon them which increases in more than arithmetical proportion to the time. The explanation of this is to be found in the nature of the mechanism.

Reasons for Eye Fatigue

When the pupil is narrowed by the contraction of the iris, there is a movement of certain muscles in association. The ciliary muscle contracts, and so, simultaneously, does the sphincter muscle of the iris. As the contraction involves a change of focus, the eyeballs themselves must be adapted to the new condition, the eyes converge, and, to enable them to do so, the small rectus muscles lying along the eye surface nearest the nose are exerted.

The muscles of the iris are controlled by nerves of the sympathetic system, whose action is involuntary. Those to the dilator muscles take a long course, for they begin in the midbrain, pass down the spinal column to the lower cervical region, then upward to the base of the brain, and reach their place in the eye in company with the ophthalmic nerve. The nerves of the other muscles originate in that part of the brain which is the seat of another nerve (third). There is, we must assume, a state of openness of the pupil in which these opposing systems, and the muscles to which they are of service, are in a state of balance and therefore approximately of rest, whereas a state of extreme and long continued contraction develops antagonisms whose reflex action produces widespread disturbance. That this is what occasions the general fatigue is demonstrated by a simple experiment: one has only to close the eyes for a time and relax the body, and the fatigue will shortly disappear. But while it is at its worst, and the strain is most severe, there is an accompaniment of irritation that, to say the least, is best eliminated.

Matters are not improved, of course, by the continued strain upon the internal rectus muscle, which holds the eyes in the position of convergence, for all the time an effort is made by the similar muscle on the opposite side of the eye to restore the normal position.

Obviously, what is needed is a quality and volume of light which will be sufficient for the purposes of the work to be done in the operating room, and which will permit the pupils to function at a wider opening than the pin-point dimensions enforced by a light that is too brilliant and that reaches the eyes both directly and in reflection from glazed walls.

Problem of Artificial Light

Artificial light itself presents another problem. Our eyes, during hundreds of generations, have become accustomed to certain conditions. They have been familiarized with, and adapted to, the green of grass and leaves, the brown of the soil, the blues and grays of the sky. These tone to our use the elements of color in the spectrum of the sunlight. The eyes would be subjected to abuse if exposed for long periods to the glare of the sun. And this would obviously become worse if, instead of obtaining the relief afforded by green and blue and brown and gray, the light were to be reflected all the time

from white and shining walls. Human eyes are not equipped for such conditions.

Besides, there is no guarantee, indeed little probability, that any of the strong artificial lights will reproduce, when broken up, the spectrum of the sun.

When light, as it comes from the sun, is resolved by the spectrum into its component elements, the various colors are observed to be ranged in certain proportions. The light produced by this combination is the light to which the eye is accustomed. Artificial light is not like sunlight in this important particular. There may be considerable variation in the relative amounts of red, yellow and blue, the primary colors, and of orange, green, violet or any combination of the principal or secondary tones, although sufficient illumination may be afforded for the purposes of vision. It follows that, where we have to do with artificial light, there may be complications resulting from the quality of the light, independent of the main consideration as to intensity. In the present-day operating theater strong artificial light is a factor to be reckoned with. Moreover, with the emphasis on cleanliness, there is a tendency to have walls which readily reflect the light, and even to accentuate the glare.

Experiments in Color Treatment of Operating Rooms

How, then, are we to go about finding relief from light conditions that are productive of eye strain, and still have the lucent atmosphere in which all objects and tissues are visible in their natural colors, and in which, nevertheless, the pupil openings will be of the degree that least exposes the participants in the operation to strain, irritation, or any other form of nervous waste?

The experiments conducted in the theater here described afford some indication of the answer.

First, the glare that is spread by the central lamp, usually one of high illuminating power, is relieved by a filter of light yellow interposed between the lamp at its lower portion and the objects below it. Should the ceiling and walls of the theater be of highly surfaced white, there would be only partial relief, as the glare from above the filter would be reflected from these surfaces. The walls, therefore, must be so treated that they will absorb rather than reflect the elements which produce the glare.

In the actual experiment, the ceiling has been left white, except for a border of yellow extending a foot or more from the wall. The wall itself, down to a certain distance, is given a yellow tone. Below this is a band of green produced, in terms of the light spectrum, of yellow and blue. Still lower down, and extending to the floor, is a band of blue. In the progress downward, therefore, the red in the spectrum has been modified gradually, and until it has ceased to be disturbing, by the other primary colors, yellow and blue.

All this, naturally, has the effect of reducing the intensity of the light below that at which it left

the lamp. But in doing so it has relieved the strain produced by excessive contraction of the pupils and the convergence of the eyes themselves. If the ideal condition has been attained, the pupil opening will be such that the strains are removed. Should it be found that in effecting this change the volume of light in the room has been reduced below what is necessary, that volume can be increased by the addition of lights in the corners of the room, thus throwing illumination to the ceiling, whence it returns again with altered characteristics as it encounters the bands of yellow, green and blue.

After some experimentation as to the results to be obtained from varying widths of the bands of blue, green and yellow, it was found that the rest-

fulness of the atmosphere in the operating room was still further improved by giving to the floor a light green color, and again by substituting blue and green for the hard white in the garments worn by operator and attendants.

Two results have been noted, each well worth while. First, owing to the elimination of eye strain and of the fatigue-producing reflexes, those engaged can work for hours without being tired at the end, and can be free in the meantime of those irritations that so often are the despair of surgeon and assistants alike. Second, in this atmosphere from which glare has been eliminated, the patient is free of that nervous dread which is so often an additional difficulty for the surgeon.

THE NEED FOR A NEW HOUSING ECONOMY

By L. SETH SCHNITMAN

So long as architects, builders, speculators and investors were content to think of housing only in its material sense—in terms of commissions, speculative profits, rentals at “what the traffic will bear” levels—just so long was it natural that our housing economy should have been static. Now that the problem is being considered in a social sense—in terms of requirements, environment, family incomes, population trends, land values—a new philosophy is growing. Out of this will come a continuing housing *rationale* that will be correlated to the multiplying demands of a complex economic life and to the instrumentalities for supplying those needs.

It no longer suffices to think of housing only in terms of the small dwelling or the multiple-family house. Shelter in its broadest sense embraces the office building, the factory, the hospital, and even the Pullman car and motor boat. (Because of space limitations this article considers shelter in its generally accepted sense—as a combination of small and multiple-family dwellings.)

The popular belief that the apartment house is a sinister influence in American life still persists despite the fact that this dwelling type has been dictated largely by economic and social currents. As a result altogether too much stress has been placed on the importance of the small house without analyzing a changing order. It is not that the small house is on the road to extinction; it is rather that the extension of this dwelling type in the future will rest more fully than ever before on social and economic forces and not so much upon the ephemeral appeal of home ownership.

There is room in our changing system of housing for the small dwelling. There is room also for the multiple-family dwelling. Neither dwelling in the future will necessarily be a continuation of existing modes, for in fact such a condition would

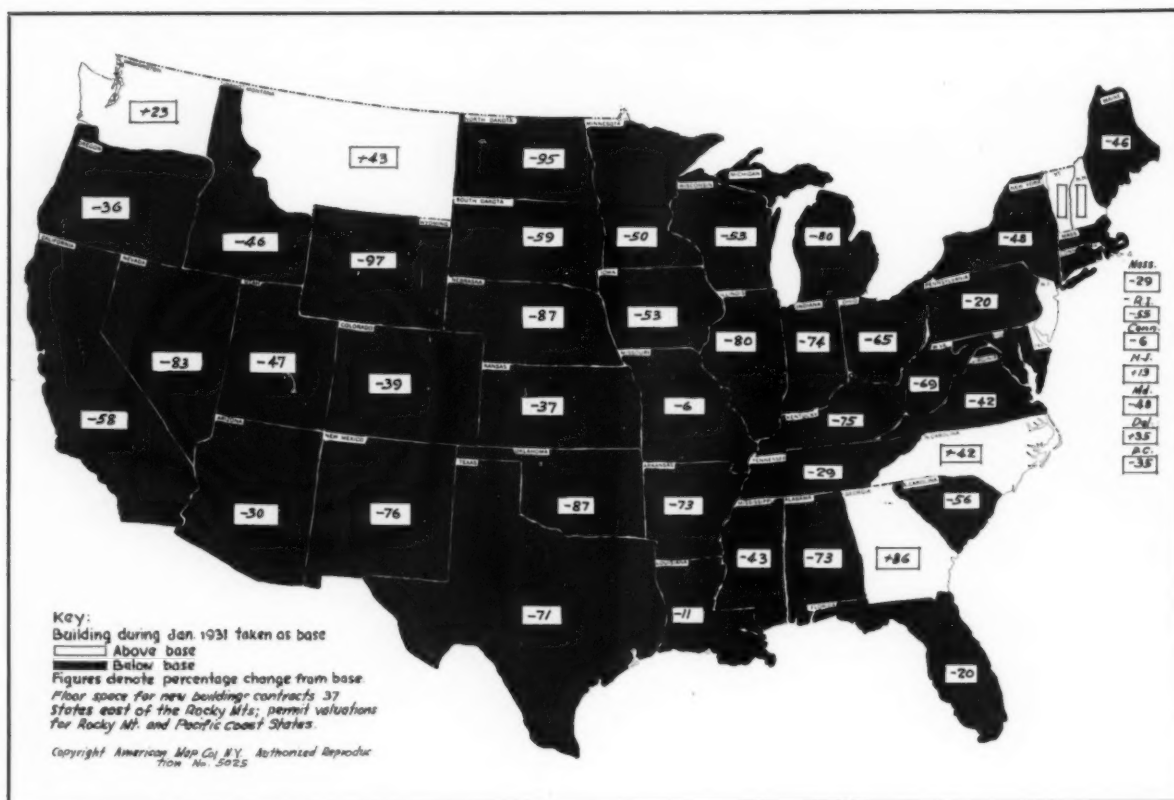
preclude the development of a dynamic economy toward which our efforts should be directed.

A survey of the evolution of the multiple-family dwelling type discloses that in its beginnings this housing type was the abode for the lowest-income classes; that in its glorification the multiple-family house became the abode of the highest-income groups; and that at present the trend is about midway between these two extremes.

More than twenty years ago in Berlin an apartment house with ultra-modern facilities was opened for occupancy. This apartment was erected not for the wealthy but for the middle class, although its appointments at the time were of standards high enough to meet the most fastidious tastes. Here is an object lesson for all who are interested in the development of a new economy as applied to housing: although architects, builders and investors have contributed much in the past to the betterment of housing standards in America, the larger problem now embraces coordination and integration to the needs of the masses with a full appreciation and a clear vision of the future. The multiple-family house, regardless of the form it may take as the future unfolds, appears destined for even further extension and development if any practical solution of the housing problem is to be effected. In the development of this type it is quite likely that a way will be found for housing our lowest-income groups.

If the multiple-family house is economic, and if it is suited to a rapidly changing social order wherein the mobility of industry and its employment opportunities has made the responsibility of home ownership burdensome, then it is altogether likely that multiple-family housing is destined to play an even more important role than it has in the past.

Such a trend would bring with it a new concep-



The January building map showed six states east of the Rockies where current building contracts were larger than in January 1931: New Hampshire, Vermont, New Jersey, Delaware, North Carolina, and Georgia. The December map showed eight states where the floor space totals of building contracts were higher than in the same month of 1930. Of the states to show increases in January a year ago, Vermont and Delaware reported gains in December.

tion of land utilization, investment opportunity and civic advancement, which is essential to the proper development of any housing economy. So long as embellishment, display, and ornate design characterize the multiple-family house, just so long will these factors operate as important limiting influences upon the economic extension of this housing type to embrace the classes of society who are asking for better living accommodations at prices which they can afford to pay.

Shelter is one of the basic needs of civilization and the desire for better, more livable accommodations persists. If architects, builders and investors will treat the multiple-family dwelling type functionally, with frankness and simplicity, there appears reason to believe that a new era in housing is in the making. In this development the conventional, particularly in pretentiousness and display, must be discarded. The multiple-family house must emerge from the speculative field to the arena of investment; housing will then become an industry in the public interest.

When this transition is accomplished we may expect to see greater tax-consciousness and less municipal extravagance, for the investor is more concerned with safety of principal than is the speculator. For many owners of real estate, it is

not now so much the problem of meeting amortization on second mortgages or interest payments on first mortgages as it is a problem of meeting current and delinquent taxes which are prior liens on real estate. So long as the speculative fever pervaded, too little thought was given to the mounting extravagances of our municipal governments whose principal source of revenue was taxes derived from the land and improvements. If the speculative builder had a vision of profit on his building venture, he was not concerned with the taxes which his prospective purchaser would be called on to pay. Now that the owner of real estate has become aware of the burdensome tax structure it is likely that his conceptions of investments have been materially altered.

The future of housing in America is not without hope. Indeed its development can be epochal if as a nation we have begun to realize the need for a dynamic housing economy, well conceived, properly coordinated and methodically executed.

If in this development of our housing economy we integrate the social needs of our communal life in accordance with the forces of our economic fabric, then may we be sure that the current wave of deflation has brought a new outlook to insure against its recurrence.

TECHNICAL NEWS AND RESEARCH

COMPARATIVE COST STUDIES OF NEW GROUP DWELLINGS

By HENRY WRIGHT

Addenda of Cost Data Used in Determining New Housing for the Reconstruction of Slums* Outlined on Pages 147-156 of This Issue

Conclusions reached in preceding articles in this issue were that large areas of city land in need of rebuilding can be acquired at costs of \$1 to \$3 a square foot, and that these areas are usually in blocks of 250 to 300 feet from street to street, which will permit rearrangement of dwelling groups so as to cover from 40 to 50 per cent of the net area within the block with new buildings up to four stories in height. However, since no new apartment-type dwellings have been built recently at rentals necessary to meet average incomes, a method was sought by which new types of two- and three-story dwellings could be built advantageously.

The old types of two- and three-story flat apartments, at present typical of such city areas, have become too wasteful because of both their inefficient plans and their inefficient use of the ground area within blocks. Modern facilities for heating and for refrigeration without coal or ice delivery to the individual family unit permit a more intensive use of the land in court groups of low buildings as well as through the use of taller buildings.

The purpose of this study has been to determine the relative costs of known forms of efficient two-family dwellings as well as to evolve new forms of three-story nonapartment dwellings which would avoid the additional expenses of apartment-house services.

This study proceeded logically from the well-known costs of simple two-family dwellings expressed in rentals as compared with known costs of three- and four-story apartments. It was found that the former could compete in rent with desirable types of efficient garden apartments at higher land costs (up to \$2 a square foot) than had been previously considered practicable. It was then assumed that if three-story dwellings to cover slightly less land area than these two-story flats could be so planned as to eliminate the additional costs of safety and service features in the apartment, such dwellings might prove advantageous in

rentals at land costs in excess of those now considered feasible for only apartment buildings.

The three-story types which have been proposed in the preceding article would form desirable types of dwellings even if the rentals equalled those of three- and four-story apartments; the studies, however, have been successful in demonstrating that by efficient use of land, the new dwellings have an advantage over apartments in that savings in land cost are not offset by added building costs. This makes them available at substantially lower rentals than any dwelling form now in common use and adapted to average city land costs of \$1 to \$3 a square foot.

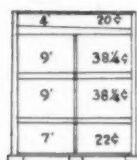
Because of its general interest as a method of procedure, as well as to substantiate the proposed solutions, the whole process is presented in this technical article.

The subject is complicated, and while care has been taken to secure accurate facts in regard to the less definite factors and particularly to apply them on a uniform basis, yet the possibility of a difference of practice or interpretation is not to be overlooked. The material should therefore be taken not as conclusive but rather as suggestive of a process by which to arrive at a new solution of a heretofore baffling problem.

A "yardstick" for measuring cost efficiency of known and theoretical types of small dwellings of similar construction was found in the detailed cost data concerning the efficient four-room two-story two-family flat built with flat roof for many years (type "B," page 433, December, 1931, issue). Practically identical four-room units in three- and four-story apartments were built at the same time, all 25' wide between party walls (50' for the double apartment unit) by 28' 4" deep except the four-story unit, which was 30' 4" deep. The 28' 4" unit has 708½ square feet of gross area, 177 square feet per room, and provides two bedrooms of good size, a living room, bath and kitchen with space for breakfast table. While not ideal in plan, one bedroom being inconvenient to bath, the plumbing is placed most efficiently and only 8 per cent of the gross area is used for stairs, halls and passages.

*This information accompanies the article, "Low-Rental Dwellings," by Henry Wright, which appears on pages 151-156 of this issue.

Cost Distribution of Four-Room Unit*



	Cu. Ft.	a	b	c	d	\$
Roof	2834 @ 18	2				569
2F	6376 @ 11 1/2	2	12	12 3/4		2442
1F	6376 @ 11 1/2	2	12	12 3/4		2442
Bmt.	4959 @ 9 1/2	1 1/2	1/2	10 1/2		992
	20545 @ 30 1/4c					\$6445
						or \$805 per room

Explanation of Costs:

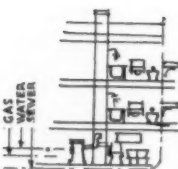
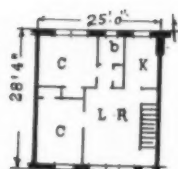
a. Cost of continuous building section, including plastering any type 28' 4" deep is approximately \$86 a linear foot or about 11c a cubic foot.

b. Cost of concrete block party wall and half chimney 25' on centers.

c. Cost of "articulation" of use space, including stairs, doors, windows and other than bearing partitions.

d. Cost of equipment: plumbing, heating, wiring, kitchen and bathroom fixtures and tile. Utility connections allocated to basement.

Economies in the flat equipped with a single heating plant as built in New York areas are shown in comparison with similar row house, as follows:

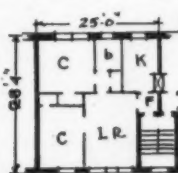


	6-Room 1-Family	4-Room 2-Family
Plumbing	\$608	\$404
Utility connections	60	30
Steam heating	201	124
	869 (100%)	558 (64.2%)

These economies are found in the reduction of plumbing and heating costs. If the heater is made an independent unit in the flat, the extra heating boiler and space for extra stair access to the basement will defeat much of the building economy as well as add to fuel cost. Even in a separate two-family unit with one heating boiler the fuel costs with inexpert firing are \$18 to \$20 per room per year, or from 80 to 100 per cent more than in the apartment. It has been assumed in this study that more expert firing in a community of such dwellings will keep this cost within \$15 per room per year, the remaining difference of 66 per cent above the four-story apartment cost representing the inefficiency of the smaller boiler and the greater roof radiation.

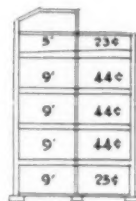
Costs of Three- and Four-Story Apartments

Applying the two-family "yardstick" to the known costs of three- and four-story apartments of almost identical plan and built in the same locality either the same or the following years (1925-26) we may compare their costs and set up the probable costs of a three-story nonapartment dwelling of similar construction.



Plan of four-room unit as built in three- and four-story apartment buildings. In the three-story the plan was practically identical, but in the four-story the building depth was actually 30' 4" in place of 28' 4", and

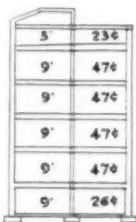
12" instead of 8" brick walls were required. The cost at 28' 4" depth was taken by deducting 40 per cent of the complete cubic cost for the interior two feet of reduced space. Room sizes would be slightly less than in lower buildings with 8" walls.



Three-Story Apartment

Roof	3540 cu. ft. @ 23¢ (higher parapet, penthouse)	\$ 814
3 living floors	each 6376 cu. ft. @ 44¢ (extra cost for fireproof stair, dumb-waiter, fire escape, higher hoisting)	2805
Basement	6376 cu. ft. @ 25¢	1594

Total, 29045 cu. ft. @ 37¢ \$10823
or 3 apartments with 4 rooms each, \$3611 per apartment \$903 per room

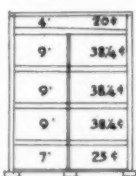


Four-Story Apartment

Roof	3540 cu. ft. @ 23¢	\$ 814
4 living floors	each 6376 cu. ft. @ 47¢ (extra cost of 12" brick walls and greater hoisting)	3007
Basement	(thicker walls) 6376 cu. ft. @ 27¢	1721

Total, 35420 cu. ft. @ 41¢ \$14563
or 4 apartments with 4 rooms each, \$3641 per apartment \$910 per room

The saving in sharing basement and roof costs in a larger number of stories is much more than offset by the additional construction costs for service and safety features required in the apartment dwelling, sufficient in fact to balance gains in land use for land costs prevalent in all but strategically located city areas.



However, if a type of three-story group dwelling could be planned identical with the two-story "yardstick" plan (that is, if the third-story tenant were permitted to pass through second-story living room, and ignoring for the moment the need

for fire escapes), the theoretical cost of such a dwelling of twelve rooms would be arrived at by inserting one more floor at a cost of 38 1/4c per cubic foot and increasing the basement sufficiently to include larger heater and hot-water plant.

The figures would be \$569 plus three times \$2442 plus \$1165, or \$9060, for three suites of four rooms each, or \$3020 per suite, or \$755 per room.

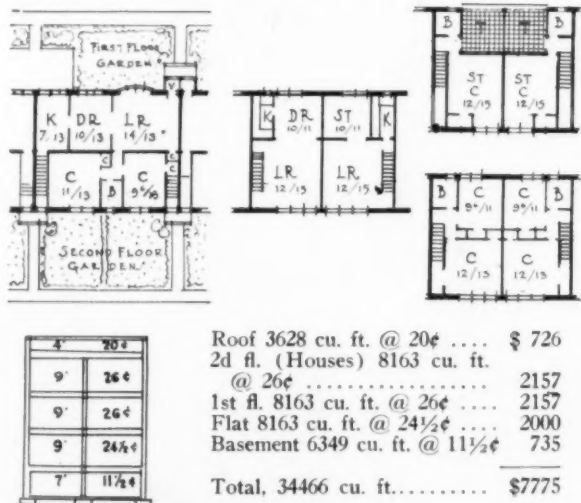
Of course, in this form such a dwelling would be impracticable. We could not place a third-story flat above two flats in the lower two stories without providing different stairs and safety features which would make it an apartment with apartment costs. But it would be altogether practical and safe (although not necessarily permitted by existing building codes) to place the living space in two stories (above a ground floor) in which each of the upper-floor families would have its main living rooms on the second floor, corresponding in position and means of access with the second-floor flat in the simple "yardstick"

*See aforementioned article in December, 1931, issue of THE RECORD.

dwelling. In other words, we can superimpose on a flat 32' wide by 28' 4" deep two four-room-and-kitchenette row houses each two stories in height and 16' wide, corresponding with the row houses of the Buhl Foundation project illustrated in the October, 1931, issue of *THE RECORD*. The final development of this combined three-story flat and row house dwelling is shown in the main group dwelling scheme illustrated on pages 154 and 155 of this issue.

Narrow fully-equipped 4½-room houses cannot be built for the same cost per cubic foot (20c plus equipment items as shown in Table "B," December issue); they will cost slightly more than 22c, as will be demonstrated in a subsequent issue of *THE RECORD*. The resultant costs must be qualified further by slipping the flat unit in between the basement and the first story of the two-story houses and by including the extra set of stairs necessary to reach the two houses on the second floor. But no changes in construction, such as service or safety features, are necessary if, as contemplated, heat only is to be furnished in common. Mechanical refrigeration is to be supplied in all cases at a service charge not included in these comparative rents; incineration of wastes is also contemplated. (In figuring the service cost of apartments hereafter no charge is included for dumb-waiter since it is no longer required.)

Cost Diagram of Theoretical Group Dwelling With Two 16' Houses Over 32' Flat Plan



In this diagram of a group dwelling in which two 4½-room 16' row houses have been superimposed on a five-room flat, the costs represent the building without equipment, which must be figured separately. The cost of the flat is taken at 24½¢.* The house cost is arrived at through a somewhat complicated process (see the cost data in the December issue, Table "B," page 433), with allowances for increased cubic foot cost for the "tighter" 16' house. To this total building cost must be added uniform items for tile baths, electric wiring and fixtures, three sets of kitchen equipment and

interior decoration, and one extra stairs in the flat story, as well as plumbing adjusted to the number of stacks and utility connections, and one heating boiler of a size required for fourteen rooms. The totals are \$1303 and \$1834 (plumbing and heating), or \$3337, to be added to \$7775, which equals \$11,112 for fourteen rooms or \$793 a room.

We have now established on a uniform basis, and with a reasonable degree of accuracy, the building costs per room on a 1926-27 basis (New York area) for brick and wood-joist construction: (1) for actual two-story four-room flats, \$805; (2) same plan, three-story apartments, \$903; (3) same plan, four-story apartments, \$910; and (4) theoretical group dwellings with five-room flats and 4½-room houses, 14 rooms per building unit, three stories high, \$793. The gross floor area of the first three identical plans is 177 square feet per room; the area of the group dwelling (4) is, as drawn, 194 square feet. While some additional space is absorbed in stairs in the group dwelling, the rooms average somewhat larger, which imposes a slight handicap in land use at a coverage identical with the three-story apartment.

Economies make it possible to provide even better room sizes in the group dwelling at less cost for building than in the apartments or even the two-story flat. Three living floors share one basement and one roof between party walls 32 feet apart without requiring the added costs for fire-proof stairs, penthouse, higher parapet wall or fire escapes. The extra cost of hoisting is absorbed in the omission of one masonry party wall between the two two-story houses at 26c per cubic foot for living floor cubage (the cubage cost for the complete height is 22c or 2c more than for the 20' wide house, as shown in Table "B," December issue).

These are the savings in building or capital costs. For land costs the three-story group dwelling is on a par with the three-story apartment, saving 33 per cent of the cost of the two-story on the same coverage. The savings in service costs as compared with the apartment include the following: no lighting or cleaning or repairs of common halls or stairs; no care of lawns or outside spaces except cleaning, lighting and snow removal of paths and small play areas. Mechanical refrigeration and incineration are assumed as common to all types with special service charges or cost allowances omitted for lack of cost data and experience. Installation costs in even a special-type incinerator for the fourteen-room building doubtless will be somewhat more than for the four-story apartment, the present capital cost of which represents 9c in the monthly rent per room.

It seems reasonable to give some slight advantage to the lower types of dwelling in land coverage. In the following tables the coverages are taken as 50 per cent for two-story, 45 per cent for three-

*The 24½¢ for the cubage cost of the flat section is reached by deducting from the 38¼¢ of the "yardstick" costs, 12¼¢ for equipment and 1¢ for the simple continuous space of 32 feet instead of 25 feet between party walls, decreasing party-wall costs per cubic foot of area and reducing the proportionate amount of partitioning. The difference should be somewhat more, but a conservative allowance is included.

story, and 40 per cent for four-story buildings.

To arrive at comparative use costs or rentals for all of the foregoing dwelling types it is necessary first to set up all capital costs on which interest, amortization and depreciation must be equitably or uniformly charged. These factors are: (1) total building cost (taken as heretofore without profits, financing or fees); (2) land costs taken at \$1 per

square foot of land in plot to represent all land and improvement cost including yard work for convenience; (3) carrying charges on building at 6 per cent for six months on total building cost and 6 per cent for one year and taxes at 2 per cent on the land cost. Other amounts for carrying charges may be assumed with little effect on comparative rentals if applied uniformly.

TABLE A: Combined Capital Costs, Including Carrying Charges During Operation, for Buildings and Land for Four Dwelling Types

Building cost per room	Net	With Carrying Charges	Plus Land* at \$1 per Square Foot		
			40% Coverage	45% Coverage	50% Coverage
A. Two-family two-story four-room	\$805	\$829.15	\$238.68 \$1067.83	\$212.76 \$1041.91	\$192.93 \$1022.08
B. Three-story four-room apartment	\$903	\$930.09	\$158.76 \$1088.85	\$141.48 \$1071.57	
C. Four-story four-room apartment	\$910	\$937.30	\$119.34 \$1056.64		
D. Three-story group dwelling	\$793	\$816.24	\$174.96 \$991.20	\$154.44 \$970.68	

Gross area per room per floor for A, B and C (177 square feet) at 40, 45 and 50 per cent coverage, equals 442, 394 and 354 square feet; D (194 square feet) at 40 and 45 per cent coverage, equals 485 and 431 square feet. These are to be divided by 2, 3 or 4 (number of stories) to give the land area per room required for each type at each assumed coverage.

The rental costs of dwellings of these types will be comprised of the following items, varying somewhat with differing conditions and habits in different communities. The items include only the net requirements of actual outlay and overhead in the case of an efficient and adequately financed operating company; they do not cover commissions and discounts on money other than 6 per cent per annum, or profits above an earning of 6 per cent on the total invested capital. Nor do they provide for vacancies. If rented continuously at the amounts shown, the amortization or depreciation would write off the whole capital investment in about 23 years, or it could at any time be credited in part toward rental reduction, if the dwellings are expected to be still suitable for use after the 23-year period. The costs are given not as a guide for investment but merely to set up careful and uniform comparisons. If building costs were to have dropped 20 per cent from these 1926-28 costs in suburban New York, then the charges attributable to capitalized building costs would be proportionately reduced.

The items involved in rental costs:

1. Interest on capital costs of building and land

*It is interesting to note that the capitalized land cost with carrying charges for land at \$1 per square foot in the case of the D type at 45 per cent coverage, featured in this article, requires almost exactly \$1 per month in the rental budget for interest and taxes. For each additional \$1 per square foot of land cost, \$1 per month is added to the rent.

including carrying charges as above, 6 per cent.

2. Taxes on full capital costs including carrying charges to equal about 3 per cent on usual assessment, 2 per cent.
3. Depreciation on full capital cost of the building including carrying charges, 2 per cent.
4. Primary maintenance:
 - a. Maintenance of internal common stairs, halls or other services, including public light.
 - b. Fuel for heating and hot-water service (see notes below).
 - c. Engineer or other help essential to (b).
5. Secondary or variable maintenance:
 - a. Repairs and redecoration, including public halls which will offset extra roof, etc., saving of smaller nonapartment buildings.
 - b. Maintenance of site including lawns except as by tenants, snow removal, etc.
6. Management, accounting and rent collection taken uniformly at 5 per cent of the preceding.

To apply these factors uniformly to all the types under construction has required considerable investigation and is still subject to some uncertainty in regard to janitor items. In the matter of fuel consumed the evidence is fairly complete. The actual cost of coal in individually-owned two-family dwellings of this type is known to be from \$140 to \$160 a year for eight rooms. This is excessive but readily explained because of: (1) inexperienced firing; (2) boilers which are not adapted to low-price fuel; (3) hot-water unit too small to be efficiently maintained throughout entire year. It is

(Continued on page 44, advertising section.)

Interiors, too, are *strikingly handsome*



De Vilbiss School (Toledo Board of Education), Architect, M. Ed. Gee, Board of Education, Toledo, Ohio
Painted throughout with 2400 gallons of Barreled Sunlight

Toledo's new De Vilbiss School chose Barreled Sunlight for *lasting* Beauty and Cleanliness —



BARRELED SUNLIGHT is now available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight — its more pronounced whiteness, richer lustre and marked durability. (Note that both forms of Barreled Sunlight are readily tinted any desired shade.)

IT is easy to see why the Toledo, Ohio, Board of Education takes great pride in its fine new De Vilbiss School. Of strikingly handsome architectural design, exteriors embody both simplicity and charm. Interiors are distinguished by lasting beauty and cleanliness.

Painted with Barreled Sunlight, ceilings and walls will remain clean, bright, handsome for months to come. For the smooth, flawless surface of Barreled Sunlight can't hold dirt embedded. Finger prints, smudges, dust — so common to all public places — may be easily wiped off with a damp cloth.

Repeated washings do not harm the soft depth — handsome finish of Barreled Sunlight. Its extreme durability materially reduces the necessity for repainting.

• • •

An all-oil product, Barreled Sunlight may be easily tinted in soft, pleasant colors appropriate to the surroundings.

Our catalog is in Sweets, but for your own files let us send you the new booklet, "For Interiors of Lasting Beauty and Cleanliness." Write to U. S. Gutta Percha Paint Co., 22C Dudley St., Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

Barreled Sunlight

REG. U. S.

PAT. OFF.

(Continued from page 216, editorial section.)

just possible that hot-water supply should be arranged as small independent storage tanks in each suite (as shown in Mr. Klaber's plan). For each added story there is some loss in radiation from vertical risers unless exposed, but there is a definite reduction in radiation loss through the roof and in basement chargeable to each story. The fuel charges assumed seem reasonably equitable at \$15

a room for two stories with numerous small individual or even central plants because of length of distribution pipes and roof radiation; at \$11.50 for all three-story types with not over 40 rooms per building; at \$9 for four stories. This is at variance with the experience of the Bridgeport Housing Corporation where two- and three-story dwellings of spreading coverage have been averaging \$12 per room per year.

TABLE B: Annual Rental Costs for Four Dwelling Types Used in This Study

Two-Story at 50 Per Cent; Three-Story at 45 Per Cent and Four-Story at 40 Per Cent Coverage; All on Land at \$1 a Square Foot

Capital Costs	Two-Story Flat \$1022.08	Three-Story Apartment \$1071.57	Four-Story Apartment \$1056.64	Three-Story Group \$970.68
(1) Interest	\$61.32	\$64.29	\$63.40	\$58.23
(2) Taxes	20.44	21.43	21.13	19.41
(3) Depreciation	16.58	18.60	18.74	16.32
(4) (a) Maintenance of halls	0.00	2.50	2.00	0.00
(b) Fuel	15.00	11.50	9.00	11.50
(c) Firing	6.00	4.50	4.50	5.00
(5) (a) Repairs and decorating	12.00	12.00	12.00	12.00
(b) Maintenance of grounds	2.50	4.00	3.50	2.00
(6) Management and collection	6.69	6.94	6.68	6.14
Annual rent per room	\$140.53	\$145.76	\$140.95	\$130.60
Monthly rent per room	11.71	12.15	11.75	10.88

This table has been carefully checked for present costs; future adjustments will be due to new methods and new bases for heat distribution as a utility. Assuming that these would tend to offset each other, the whole matter seems to hinge on the provision of socially better conditions by placing the tenant in a more independent position and mak-

ing him responsible for the daily maintenance of the entire building, except utility tunnels, and all the grounds except play areas and walks, thus eliminating service charges. Costs at higher land prices may be figured by proportionate additions to the capital land charges (Table A) at 8 per cent plus 5 per cent of the product for item (6).

TABLE C: Annual Costs at Various Land Prices

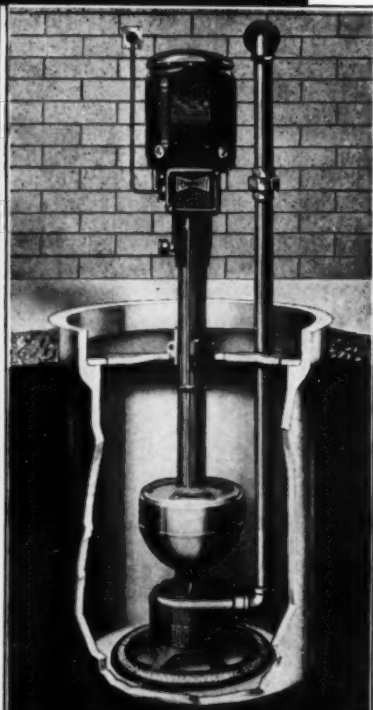
Type	Two-Story Flat	Three-Story Apartment	Four-Story Apartment	Three-Story Group
Land at \$1	\$192.33	\$141.84	\$119.34	\$154.44
Annual land charge	16.14	11.90	10.03	12.96
Annual building charges	124.39	133.86	130.92	117.64
	140.53	145.76	140.95	130.60
Monthly rent	\$11.71	\$12.15	\$11.74	\$10.88
Land at \$3	48.42	35.70	30.09	38.82
Monthly rent	\$14.40	\$14.10	\$13.41	\$13.06
Land at \$5	80.70	59.50	50.15	64.74
Monthly rent	\$17.10	\$16.11	\$15.09	\$15.20

The three-story group dwelling therefore could replace in the field of moderate size low-cost dwellings all three-story buildings on any price land and four-story buildings at prices up to a maximum where neither type may be used to advantage over elevator apartments. The walk-up apartment is relegated to special situations where families re-

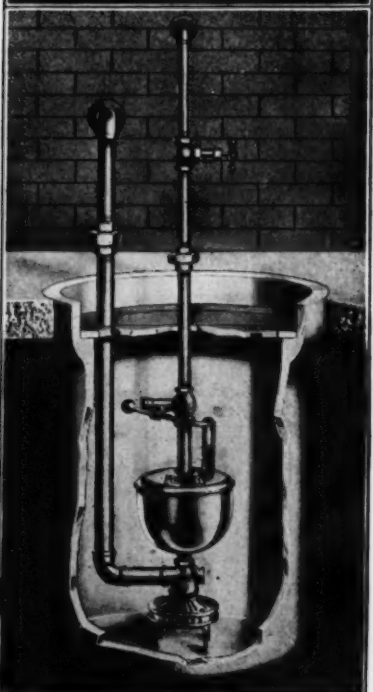
quire and are prepared to pay for more extensive services than are to be considered in this field. Other than economic conditions may of course require consideration, and changing construction technique will doubtless become a factor, but for immediate city rehabilitation there seems reason for a serious consideration of these principles.

RUST PROOF

PENBERTHY
AUTOMATIC
ELECTRIC
SUMP
PUMP



PENBERTHY
AUTOMATIC
CELLAR
DRAINER
(Water Operated)



COPPER AND BRONZE THROUGHOUT



THE architect need not be told the many advantages of using copper and bronze in the construction of equipment for the removal of seepage water from basements, elevator sumps, piping tunnels, scale pits, etc.

Penberthy Automatic Electric Sump Pumps and Automatic (water operated) Cellar Drainers are built of copper and bronze throughout . . they cannot rust.

The design and workmanship of Penberthy Pumps are as outstanding as the quality of the materials used in them. Consequently, these pumps are trouble-proof as well as rust-proof.

There is a type and size of Penberthy Pump for every purpose. Sump covers for both electric and water operated units can now be supplied at slightly additional cost. Penberthy Pumps are stocked by leading jobbers everywhere.

PENBERTHY INJECTOR COMPANY

Established in
1886

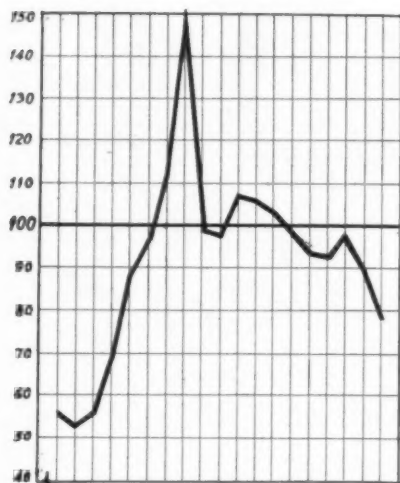
DETROIT

Canadian Plant
Windsor, Ont.

**PENBERTHY PUMPS
REMOVE SEEPAGE WATER**

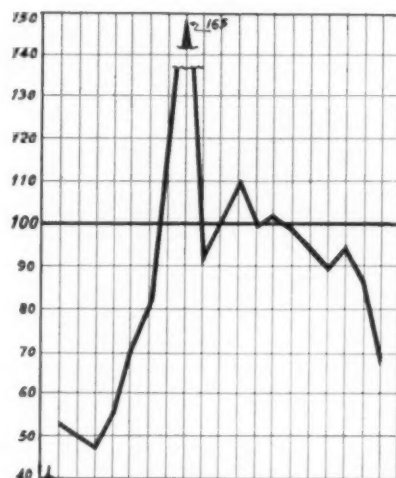
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average—100



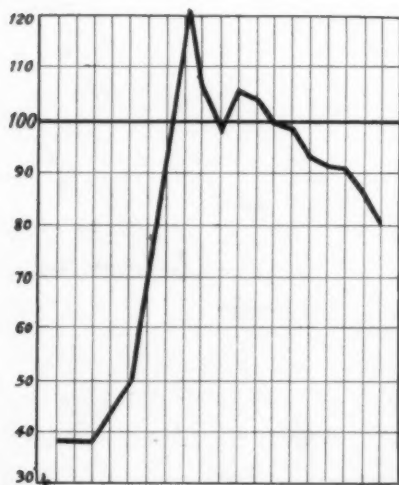
GENERAL INDEX

Current figures on new building operations give no promise for stronger material prices.



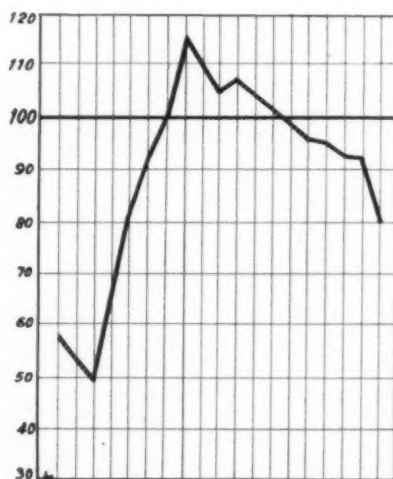
LUMBER

Despite large retrenchment in production, inventories are still unwieldy, particularly in the light of low building volume.



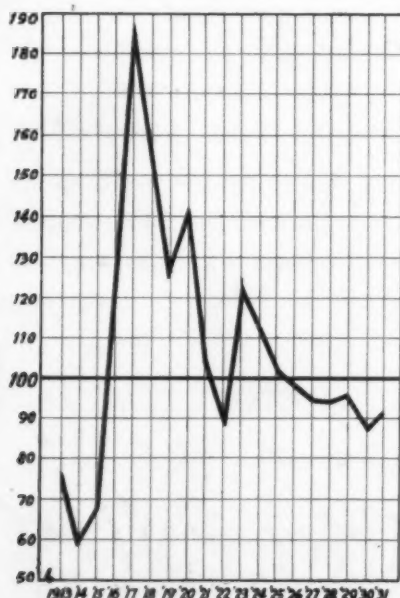
BRICK

No signs are apparent which would justify belief that prices are stabilized at current levels.



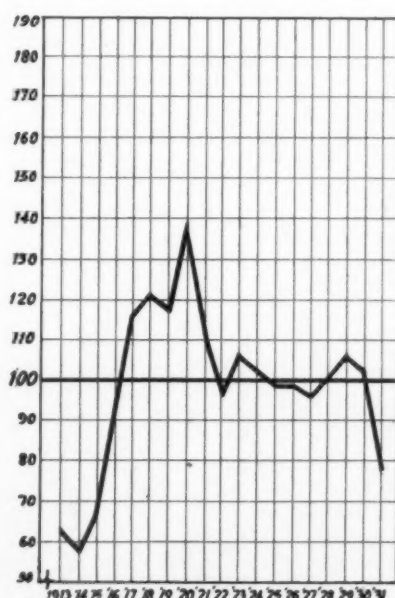
CEMENT

Inventory position has been improved somewhat; balance between supply and demand is not yet struck.



STRUCTURAL STEEL

Outlook is clouded; little likelihood that current price level can be maintained unless far better construction conditions loom.



OTHER MATERIALS

No significant change in the direction of prices is apparent; nor is any change likely until building conditions show signs of improvement.

WHY
*is this new
glass blackboard
so good*
?

BECAUSE

It is made of black plate glass—with a *suspended abrasive* uniformly dispersed throughout the glass *while molten*. Not just a top surface treatment that wears smooth and slippery, but a blackboard that is perfect *surface all the way through from back to front*. Experimental tests equivalent to one hundred years wear have left Seloc Glass blackboards as good as new.



A NEW COMPOSITION BLACKBOARD
KNOWN AS "SELOC SLATE"

Composed of long length wood fibres, impregnated in oil, and formed under pressure of eight thousand lbs. to the square inch. Is waterproof, and will not warp or bulge. Guaranteed for ten years. Where price is a factor, here is best obtainable material.

NEW!

—not merely a
glass blackboard
but a NEW and
VERY SUPERIOR
glass blackboard

HERE, at last is the final and completely satisfactory solution of all blackboard problems. Here is the *Seloc Glass* blackboard, guaranteed against the defects of previous plate glass blackboards because *The Seloc Can Never Wear Smooth*. Educational experts claim that black plate glass makes the ideal board—non-fading, obtainable in almost any lengths, easily installed, practically indestructible, and susceptible of a perfect finish. Now to these advantages we have added *Uniform Composition Throughout* by means of a suspended abrasive *uniformly dispersed throughout the black plate glass*. The result is a velvety surface that lasts as long as the board itself, cannot get "slick" as surface treatments do, and in end cost is by far the most economical to specify. On your next job—investigate *Seloc Glass*—it's the last word in blackboards and we cannot see that it will ever be surpassed. Guaranteed for the life of the school.

**NEW YORK SILICATE
BOOK SLATE COMPANY**
20 VESEY STREET . . NEW YORK CITY

QUESTIONS AND ANSWERS

PAINTING TRANSITE

"Can paint be permanently and satisfactorily applied to Transite?"

H.C.

Henry A. Gardner of the Institute of Paint and Varnish Research states: "It is my understanding that *Transite* is made with a mixture of portland cement and asbestos. If this is correct, I believe that such surfaces could be finished satisfactorily, provided they were well dried.

"The same type of finishes which give satisfactory service upon plaster walls or exterior cement walls will probably be entirely satisfactory for *Transite*. Usually such finishes comprise, in the priming coats, kettle-treated china wood oil compositions, which are excellent from the standpoint of moisture-proofing and withstand to a great extent the effects of any free lime which may be near the surface of the wall."

The Johns-Manville Company, manufacturer of *Transite*, suggests the following specifications for painting that product:

All surfaces to be painted must be clean and dry. All dirt and loose particles must be removed with a wire brush or stiff broom, after which the surface is to be primed with a sealer made of alkali-resisting sealer of a selected color.

The second and final coat shall be any standard oil paint applied as mixed by manufacturer, in color selected.

If it is desired to reduce the alkali-resisting sealer, this may be done with pure raw linseed oil or a small amount of turpentine.

PROMOTING COOPERATIVE APARTMENTS

"An acquaintance of mine is promoting a cooperative apartment house for a group of his friends. The plans must conform to their particular requirements. He has asked me to prepare preliminary sketches with the understanding that if the job goes ahead I will be given the commission for complete architectural services. He states, however, that I must purchase an apartment in the building out of my fee and that any difference between the cost of this apartment and the agreed fee will be paid in cash. I should like to consider this proposition seriously. Could you offer any suggestions for my guidance in arriving at a decision?"

C.R.W.

Answer by Charles H. Lench, architect and lecturer on "Financing Income-Producing Buildings" at Harvard University, Columbia University and Massachusetts Institute of Technology; author of "The Promotion of Commercial Buildings," Architectural Economics Press, New York:

In the first place, one may suggest that an operation of this kind need not be wholly cooperative. Many promoters start out with the idea

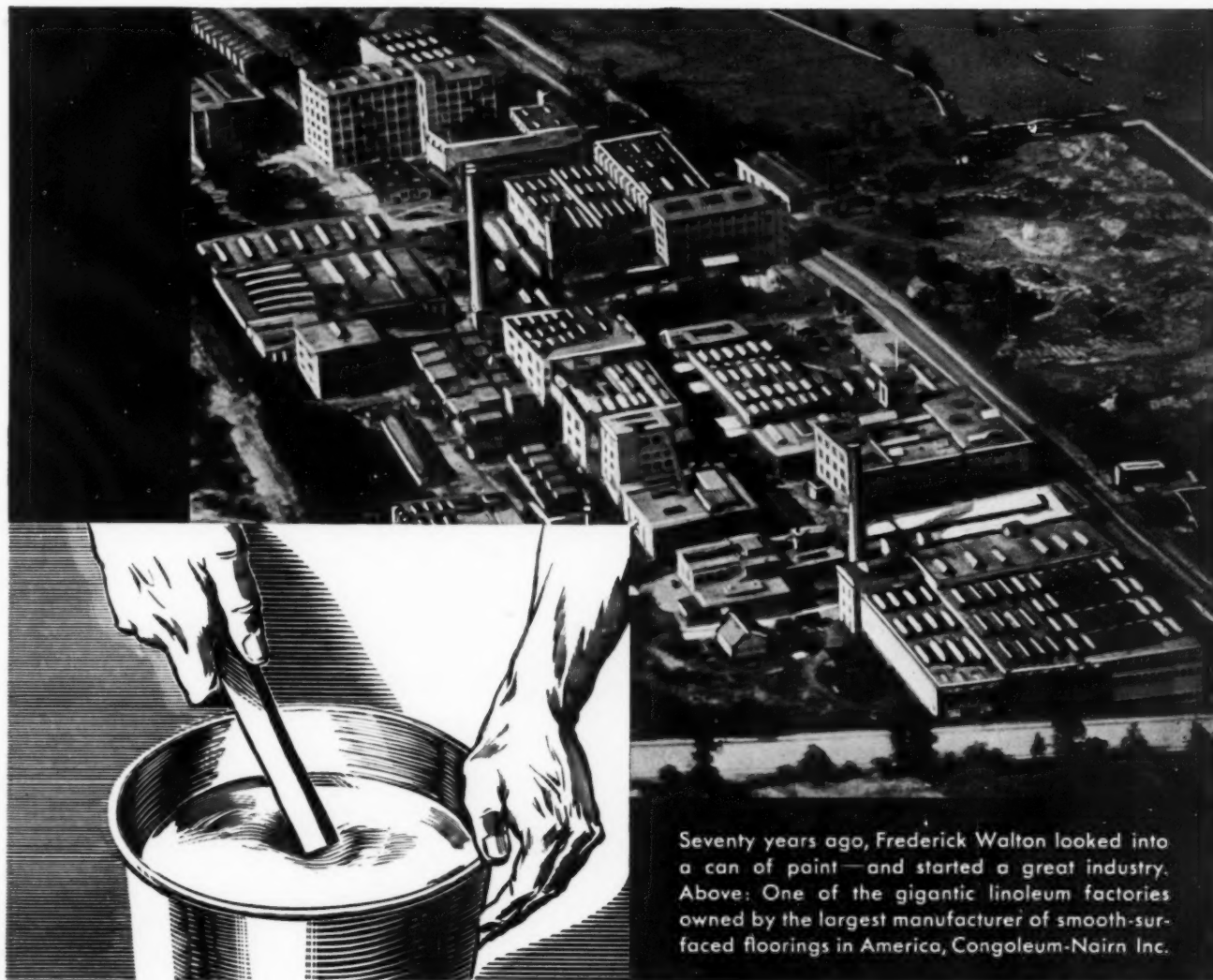
that their project is to be 100 per cent cooperative only to find later that they are unable to sell all the apartments in the building. Rather than abandon the promotion entirely, they then endeavor to make it partly cooperative. In such cases, the unsold apartments are rented and the income applied toward the carrying charges.

Promoters' set-ups for partially cooperative and 100 per cent cooperative apartment houses are somewhat different. Set-ups made to determine a price at which a building is to be sold to cooperative owners, however, are practically the same for both types. This sales price equals the sum of the items of land, building, normal carrying charges during construction, miscellaneous promotion expenses and a general promotion fee. A profit on the sale of the land to the cooperative owners is also included, as well as a profit on the sale of the building itself, although these profits are sometimes included in the general promotion fee. The tenant-owners must furnish cash in an amount equal to the difference between the purchase price and the mortgage or mortgages that the promoter has been able to arrange. If the building is say 50 per cent cooperative, the cash investment per room is determined by dividing the total cost involved by 50 per cent of the total rooms in the building. Assuming a required cash investment of say \$5,000 per room, it is obvious that the cash required to purchase an apartment would be determined by multiplying the cash investment per room by the number of rooms purchased.

In a partially cooperative building, the income from the unsold rooms goes toward paying operating expenses, taxes, depreciation, and interest and amortization on mortgages. In computing income, however, some allowance first should be made for vacancies. The difference between income and expenses will show either a surplus or a deficit. This surplus or deficit is then divided by the number of rooms purchased by the tenant-owners to determine the surplus or deficit per room.

An investor in a cooperative apartment house must figure loss of income on his cash investment. This loss, in conjunction with surplus or deficit on operating, will determine whether or not he would be better off as a tenant-owner or a renting tenant. Compared with the cost of renting, a well-conceived, partially cooperative building should show the purchaser of an apartment a sufficient annual saving to amortize his cash investment in a very few years. And then, after his cash investment has been amortized his apartment should cost him considerably less than he would have to pay as a renting tenant, and should also offer money-making possibilities in case the property increases in value over a period of time.

In a 100 per cent cooperative, the tenant-owners' cash investment over and above the mortgages must be divided by the total number of rooms in



Seventy years ago, Frederick Walton looked into a can of paint—and started a great industry. Above: One of the gigantic linoleum factories owned by the largest manufacturer of smooth-surfaced floorings in America, Congoleum-Nairn Inc.

A long way from a can of paint!

A young man stares earnestly at the gummy film which has formed on the paint in an open can. What is it? Is it good for anything? Experiments followed. Young Frederick Walton combined this rubber-like substance (oxidized linseed oil) with this and that—finally with ground cork. And an amazingly useful new floor had been discovered—linoleum.

That was in 1863. Only a few years later, linoleum came to America. Ground was broken for the beginning of the great factory illustrated above—today the home of Sealex Linoleums.

It would take more room than we have here to tell the whole story of linoleum progress. Let us finish what we have begun by sending you two books:—

The first is a *book of pictures*—containing fifty-

one actual photographs of modern, resilient floors in many different types of buildings. It will show you what distinctive effects may now be inexpensively achieved with these materials.

The second is a *book of facts* about school floors—written by architects. It gives you information that makes for *intelligent buying*.

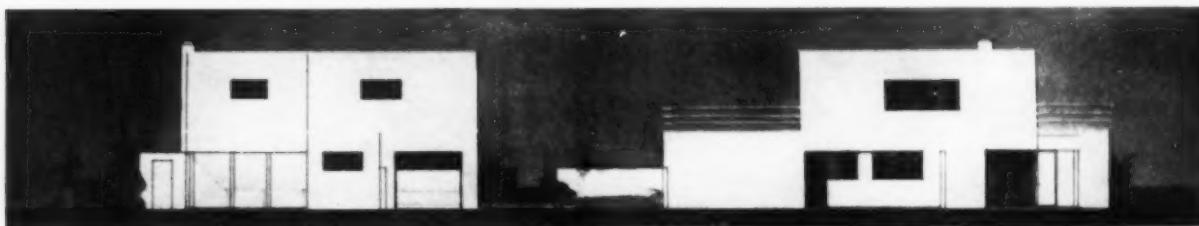
Both books are free. Write for them today—and for full information on our Bonded Floors installation service, in which Sealex materials are backed by Guaranty Bonds.

CONGOLEUM-NAIRN INC. . . . KEARNY, NEW JERSEY

SEALEX
LINOLEUM FLOORS

the building to determine the cash investment per room. Multiplying the cash investment per room by the number of rooms occupied gives the cost of the tenant's apartment. The total annual charges, including interest on the cash furnished by the tenants, is divided by the total number of rooms in the building to determine the annual carrying charges per room. Unless these charges are lower than the rental price for similar rooms in the same neighborhood, there is no advantage to the tenant-owner in making a cash investment. Any saving over and above such rental cost, however, can be used to amortize his cash investment. When the cash invested by the tenants has been repaid, with interest, this item of interest will no longer be

included in the annual statement of carrying charges. At this stage, dividing carrying charges by the number of rooms in the building gives the proportionate share of carrying charges per room that the tenant-owner will have to pay annually for his apartment after his money has been refunded. If, after the cash investment of the tenant-owner has been entirely amortized with interest, he can occupy an apartment at a low annual cost per room as compared with rentals for similar rooms in an adjoining building, and if, in addition, there are possibilities for increment in the value of the property over a period of years, there might be sufficient justification for making an investment.



NEWS IN BRIEF

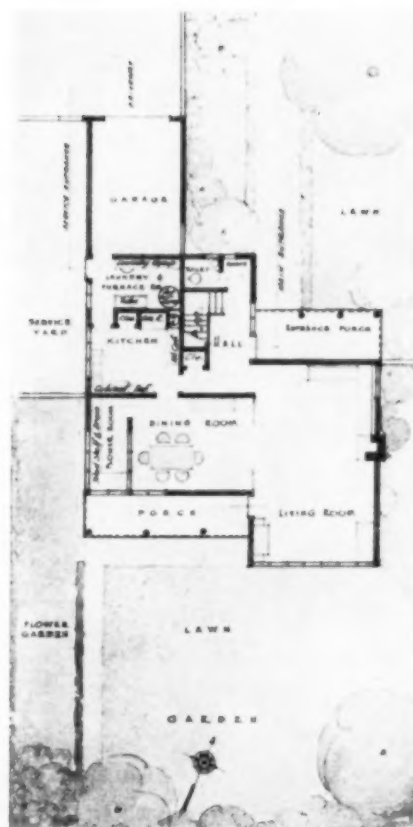
AWARDS IN UNEMPLOYED ARCHITECTS' COMPETITION

Cash prizes have been awarded by the Architects' Emergency Committee of the New York Architectural League in a competition among unemployed architects and draftsmen for the design of a "small house for mass production." The competition was in conjunction with the League's exhibition of architectural designs by Joseph Urban through which funds totaling about \$12,000 were raised for the prizes.

The winners are: S. Clements Horsley, first prize; Erik Kaeyer, second prize; John Donald Tuttle, third prize; and Anthony A. Lione, fourth prize. Special work offered as added reward to the first four winners, according to Julian Clarence Levi, President of the Architectural League, will consist of research on housing in connection with exhibits now being planned for the Chicago World's Fair under the direction of Ely Jacques Kahn.

PALACE OF THE SOVIETS

A New York architect, Hector O. Hamilton, shares first prize with two Russian architects in the international competition for plans for the projected Palace of the Soviets to be erected in Moscow. Two other Americans, Oscar Stonorov and Alfred Kastner, were among several others awarded second prize. Designs by Thomas W. Lamb and Joseph Urban received favorable mention among the total of 272 schemes submitted.



PRIZE-WINNING DESIGN IN COMPETITION FOR "A SMALL HOUSE FOR MASS PRODUCTION" SPONSORED BY ARCHITECTS' EMERGENCY COMMITTEE OF THE NEW YORK ARCHITECTURAL LEAGUE
S. CLEMENTS HORSLEY, DESIGNER

LOUISIANA HAS A NEW CAPITOL...

LOUISIANA STATE CAPITOL BATON ROUGE, LA.

Architect: Weiss, Dreyfous & Seifert, Inc., New Orleans, La. *Mechanical Engineer:* F. H. Chisholm, New Orleans, La. *General Contractor:* George A. Fuller & Co., Washington, D. C. *Plumbing and Heating Contractor:* American Heating & Plumbing Co., New Orleans, La.




THE "Pelican State" boasts a new and splendid capitol. The daring height of the structure and the disposition of its parts clearly reflect the modern age. Yet it bears marks of classic tradition and has the detachment and the dignity of setting appropriate to its use. All its various conveniences are of the most practical, approved, and advanced types and kinds. Against whatever vagaries of climate may need to be reckoned with, even in the warm land of the sugar cane, vacuum heat is provided. The aim of those responsible has been to secure, throughout,

such permanence as the tower denotes, walled as it is with buff-colored stone, well buttressed, set on its base of white granite. In the choice of equipment for such a building and for such a purpose, it is of interest to record that the major pipe tonnage was NATIONAL—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY · Pittsburgh, Pa.

Subsidiary of United  States Steel Corporation

NATIONAL PIPE

SUPPORT FOR ARCHITECTS EMPLOYMENT BILL

More than 200 national and local organizations, representing all factors of the building industry as well as engineering, industrial, labor, civic and other groups, have joined the American Institute of Architects in urging the enactment by Congress of legislation to decentralize the function of the Office of the Supervising Architect of the Treasury which relates to the design of public buildings.

Among the national organizations supporting the position of the Institute are:

American Engineering Council, American Face Brick Association, American Institute of Steel Construction, Associated General Contractors of America, Building Trades Department, American Federation of Labor; Contracting Plasterers' International Association, Electrical Guild of North America, International Society of Master Painters and Decorators, National Association of Building Congresses, National Association of Building Trades Employers, National Association of Heating & Piping Contractors, National Association of Ornamental Bronze, Iron & Wire Manufacturers, National Builders Supply Association, National Roofing and Sheet Metal Association, National Slate and Tile Association, United Roofers' Association, the Construction League of the United States.

REAL ESTATE APPRAISAL INSTITUTE

The National Association of Real Estate Boards has approved and directed the organization of the American Institute of Real Estate Appraisers. Disorganized conditions in appraisal procedure, and errors and abuses that exist in real estate valuation, have prompted the organization of the Institute.

ARCHITECTS HONOR JAMES MONROE HEWLETT

James Monroe Hewlett, Past-President of the Architectural League of New York, was the guest of honor at a recent dinner given by the League to mark his appointment as Resident Director of the American Academy in Rome.

CAMPAIGN FOR REPAIR OF BUILDINGS

A national agency designed to aid in bringing about a revival of business through country-wide stimulation of the repair and improvement of residential, commercial, industrial and institutional property, implemented by local community organization, has just been put into operation in Washington. This undertaking is comprised in the program of the recently appointed Sub-Committee on Business Cooperation in Community Development of the Committee on Reconditioning, Remodeling and Modernizing of the Department of Commerce. The creation of this national committee is an outgrowth of the President's Conference on Home Building and Home Ownership.

CHRYSLER BUILDING COMPETITION

Six architects have been asked to submit designs in the competition for the Chrysler Corporation Building and Exhibit at the Century of Progress exposition to be held in Chicago in 1933. The architects are Eliel Saarinen, Holabird and Root, Voorhees, Gmelin and Walker, Paul Phillippe Cret, Roger Bailey, and Henry Hornbostel. Kenneth Franzheim is acting as architectural advisor.

EMERGENCY PLANNING AND RESEARCH BUREAU, INC.

To relieve unemployment in the architectural and engineering professions, the Emergency Planning and Research Bureau, Inc., has been organized by the Boston Society of Architects and engineering societies of Boston. The policy is to give unemployment relief and to provide useful employment adapted to the technical training of those employed. The general rate of wages will be \$15 per week for five days' work. At the time of announcement on January 15, 57 men had been given employment.

The program of this organization involves contributions to be made by practising architects in weekly amounts according to their ability to pay, and by draftsmen according to a percentage of their weekly salaries. Representing the Boston Society of Architects in this relief work are Hubert G. Ripley, James F. Clapp and William Stanley Parker.

ARCHITECTS' SMALL HOUSE SERVICE BUREAU OPPOSED

Growing opposition to the Affiliation of the American Institute of Architects to the Architects' Small House Service Bureau, Inc., was brought out at the last meeting of the New York Chapter, American Institute of Architects. A self-constituted committee was formed to undertake an investigation for the information of members of this Chapter.

At the last monthly dinner meeting of the Brooklyn Chapter of the American Institute of Architects, members adopted a resolution stating that this Chapter stands opposed to "the approval or support in any official manner by the American Institute of Architects of any individual, group, association or organization, such as the Small House Service Bureau, selling or deriving any benefit by the sale, resale or distribution of architectural service in the form of stock plans or specifications."

CORRECTION

Photographs of the new operating rooms at Mt. Sinai Hospital which were used as illustrations in the February issue for the article by Dr. S. S. Goldwater on "Planning the Surgical Facilities" were incorrectly credited to York and Sawyer, architects. These operating rooms were designed by Robert D. Kohn and Charles Butler, associated architects.

For Spandrels... Revere Leadtex

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VARIETY *in* SHADE or PATTERN



Gabriel Moulin

Designs that embrace regularity of vertical line without sacrifice of interest in detail continue to give importance to the spandrel.

The William Taylor Hotel rearing its 28-story Gothic Tower amid San Francisco's mid-town, includes 512 spandrels in the pattern of its facade... spandrels of Revere Leadtex... lead-coated sheet copper.

In Leadtex, the softening charm of lead is now added to the ease-of-working that belongs to copper. Intricate shapes and designs are easily wrought...and economically. Sharpness of line and detail is retained...in a combination of two permanent metals.

The William Taylor Hotel and Temple M. E. Church, San Francisco, California. Lewis P. Hobart, Architect... Cahill Bros., General Contractors.

+ +

Its light weight, too, is a distinct constructional advantage.

Finish and tone can both be varied... smooth or rough... from bright metallic to antique grey.

Revere Leadtex is equally adapted to a wide variety of other architectural uses... roofing, flashings, gutters and leaders, leaderheads, cornices and decorative applications. For complete data on Revere Leadtex or Sheet Copper, address Revere Copper and Brass Incorporated, 230 Park Ave., New York City.



Close-up photo of Revere Leadtex spandrels used in the William Taylor Hotel, showing 2 of the 5 designs. Fabricated and installed by Forrester Cornice Works. Note how well details of design are retained in these spandrels without loss of lead's mellowing influence.

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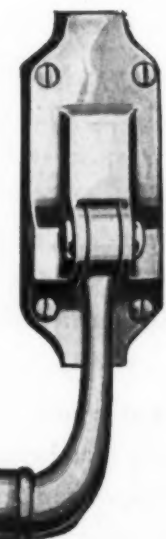
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The genuine Type "B" Von Duprin naturally *costs* more than an ordinary exit device, because it *is* more than an ordinary device.

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Bathroom in which the walls are covered with a light-weight linoleum.

WALL COVERING

A new wall covering that has the same general characteristics as linoleum but is of much lighter weight is being offered under the trade name of "Sealex Wall Covering" by Congoleum-Nairn, Inc., of Kearney, N. J.

The new material is composed of a special composition of cork, pigments and linseed oil, keyed to a fabric backing. This is treated to present a waterproof surface which is impervious to the entrance of dirt and which can be easily cleaned with a damp cloth.

In applying the new wall covering a special adhesive is used which is also waterproof. This paste is applied as in applying linoleum; otherwise "Sealex" is hung in much the same manner as is ordinary wall paper.

Ten colors are available, all of which, however, are two-tone marbelized effects. "Sealex" weighs $7\frac{1}{2}$ pounds per square yard and comes in rolls six feet wide and up to forty feet in height.

NEW FINISHING PROCESS

A device which will spray any one of a number of metallic coatings on wood, cloth, masonry or another metal is now being offered by the Metalizing Company of Los Angeles, Calif. The metallizer, as it is called, will spray a coating of lead, zinc, bronze, aluminum or other material depending on the coating desired.

Material is fed into the gun in wire form. The machine melts and projects the metal at a speed of 30,000 feet per minute, forming a coating on the object sprayed which it is claimed is as permanent as if coated with a sheet of the same metal.



Crucifixion Group of Bronze on granite base in Mount Elliott Cemetery, Detroit, Michigan. Modeled and cast by GORHAM.

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J. Y. Ripplin, Architect

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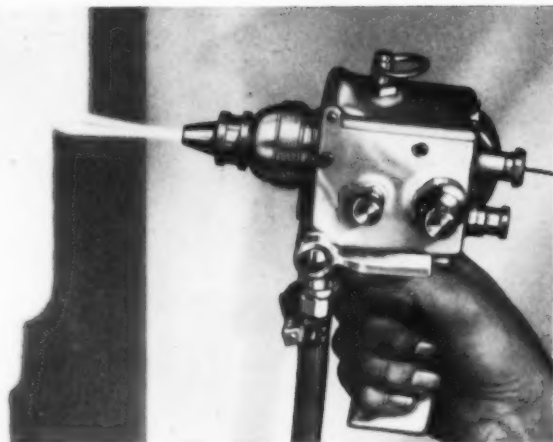
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City State



This metallizer can spray metallic coatings on wood, cloth, masonry or other metals.

Effective use was made of this process in the Wilshire Professional Building in Los Angeles, where elevator doors, mail boxes and stair rails were sprayed with a nickel silver coating. Metal work in the foyer of the Warner Brothers' Theater in the same city was similarly sprayed with an aluminum coating.

The use of this device offers possibilities for building economies in many directions since the purpose of the metal can be served with just a coating, using cheaper though efficient materials for the body of the object.

AIR CONDITIONING

A new individual type air-conditioning unit that is attached to, and makes use of, the regular heating system is announced by the Frigidaire Corporation of Dayton, Ohio. The new unit is compactly built and available in walnut, oak or mahogany.

The Frigidaire units are made in three models, two of which are the floor type and one the suspended type. All three occupy 4 square feet of floor or wall space, the floor type being 46 inches in height.

In operation, the room air is drawn from the floor and into the conditioner by a centrifugal fan, and is blown over the cooling coil which is maintained at an average temperature of 45 degrees. In its passage over the cooling coil the air is chilled and excess humidity removed.

After the air is cooled, humidified and cleansed in its passage through the cooling coil, it is sent through a 20-degree grille located on top of the conditioner cabinet and is diffused throughout the room without creating a draft. Cooling begins instantly when the compressor is started. Air capacities range from 450 to 585 cubic feet per minute.

In the colder seasons the refrigeration unit is made inoperative and the heating coil is connected to the regular heating system. The heated air is moistened by the dissipation of water from the humidifier and is sent into the room by the centrifugal fan.



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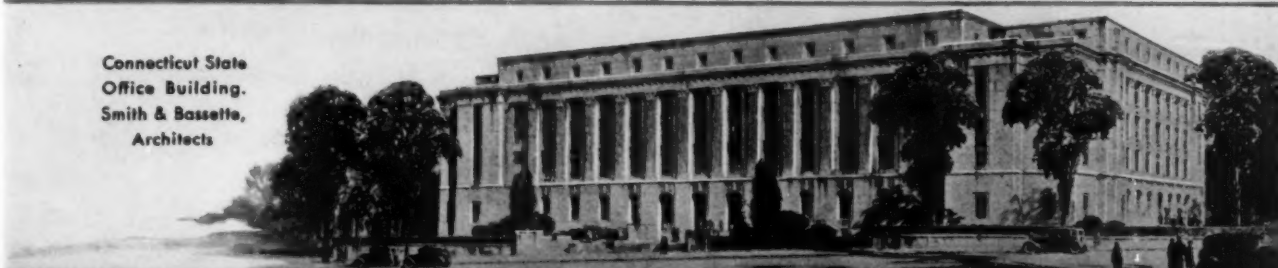
Town Hall, Bloomfield, N. J.
Bartlett & Marsh, Architects



Essex County Hall of Records, Newark, N. J.
Guilbert & Betelle, Architects



Connecticut State
Office Building.
Smith & Bassette,
Architects



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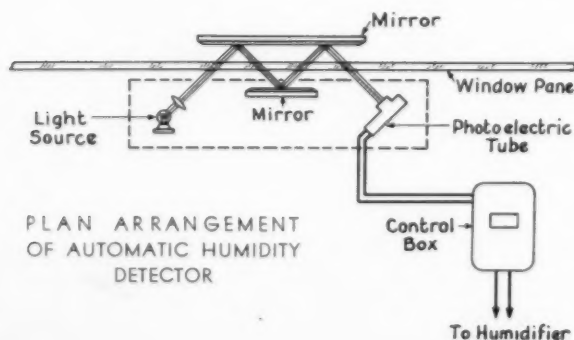
Shipping cartons, containing 25 sheets, protect the Insulmesh and facilitate handling and storage

HUMIDITY DETECTOR

A new use of the photo-electric cell, namely that of regulating the control of air-conditioners through the relative amount of moisture on the window pane, has been developed by the B. F. Sturtevant Company in collaboration with the General Electric Company.

By directing a beam of light through the window and on a photo-electric tube, a method of control is produced which turns off the humidifying equipment at the proper time. The moisture on the glass obstructs the light and the sensitive photo-electric eye passes an impulse to a Plotron tube which actuates a relay to stop the humidifier.

The photo-electric control is installed at a window, preferably on the north side of the house



where the sun's rays will not interfere. In actual installations the light does not shine directly on the photo-electric tube but is reflected by mirrors back and forth through the window two or three times to cover a larger area of the window and thus make the equipment more sensitive.

The relay governs the starting and stopping of the motor driving the humidifier. As soon as sufficient moisture collects on the window pane to reduce the intensity of the light, the motor is stopped. When the moisture clears, the motor starts again.

STEEL KITCHEN UNIT

Economy in apartment floor space is in many cases centered about the kitchen functions. This economy has been carried forward by the use of combined kitchen units. A new unit of this type is now being marketed by the Parsons Company of Detroit, Mich. The new unit occupies a space of less than ten square feet and includes an electric range with oven, a sink and drainboard, a refrigerator for either ice or electric operation, and generous storage space. Connections are provided for water, drain, gas, electricity, and ventilating shaft. The units are built of steel throughout and are finished in lacquer of a number of different colors.

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Reflected glare: A constant annoyance to busy workers.



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Balanced Lighting can light the way to 1932 remodelling plans

One of the outstanding features of remodelling projects this year will be better lighting. Architects have been quick to recognize the value of cheerful, up-to-date lighting to enhance the rental value of old buildings. They will make re-lighting the keynote of their remodelling plans.

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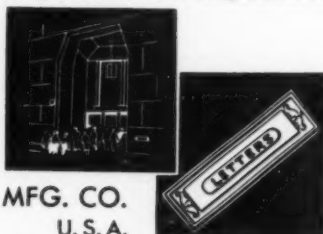
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YEAR BOOK OF THE NEW YORK CHAPTER, AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS. Catalog of the Eighth Annual Exhibition. Supplemented by Garden Sculpture by American Artists from The Fifty-Sixth Street Galleries. 1931 Architectural Catalog Co. Inc., New York. 22 pages of photographic plates. Price 50 cents.

Some exceptionally good photographic views illustrate work during the past year by members of the New York Chapter of the American Society of Landscape Architects. Centered mostly in or around New York State, the work varies in scope from gardening to the designing of swimming pools and terraces.

CALIFORNIA GARDENS. By Winifred Starr Dobyns. Published by The Macmillan Company, New York City. 223 pages, 207 photographic plates. Price \$5.

These gardens in California are grouped according to various features or elements in landscape design. A foreword by Myron Hunt emphasizes the importance of landscape architecture at the outset of planning a home and during each succeeding stage in the life of a garden. Excellence in photography and a wide variety of subject material make the book acceptable to architects and landscape designers.

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS. Illustrations of Work of Members. Published by The House of J. Hayden Twiss, New York City. Approximately 340 pages. Price \$5 (cloth), \$4 (paper).

This volume illustrates work by members of the American Society of Landscape Architects in all parts of the United States, and comprises many types of landscape design and architecture, executed mostly in private estates and gardens. Plans for townships, universities, amusement parks and cemeteries are also shown. Garden designs include swimming pools, terraces, steps and walks as well as the larger and more formal designs.

MORE THAN 1,200 ARCHITECTS have requested detailed data on MUELLER-STURTEVANT CLIMATOR Air-Conditioning Equipment for *Home Installations....*

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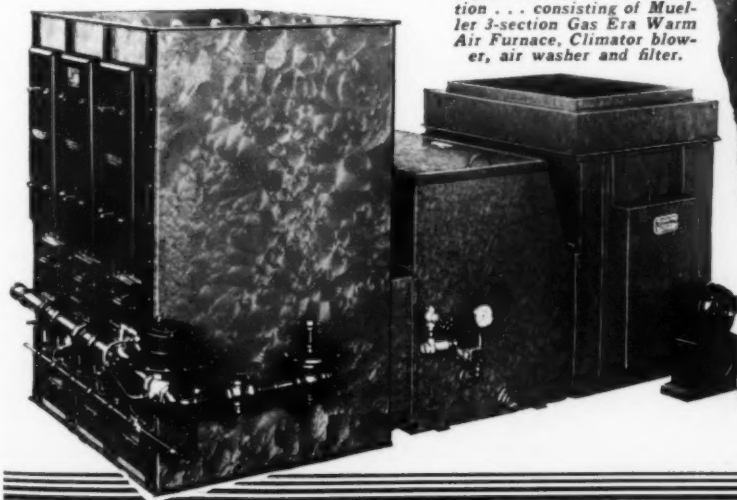
Many existing warm air heating plants may be completely modernized by the addition of Climator blower, washer and filter units . . . installed as auxiliary equipment.

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THE ORDERS OF ARCHITECTURE. By Arthur Stratton, Architect; with an introduction by A. Trystan Edwards. Published by J. B. Lippincott Company, Philadelphia. 80 plates. Price \$8.

Mr. Stratton approaches his subject from the aesthetic standpoint, analyzing the familiar orders with a view to their application to contemporary usage. The text is illustrated.

PLANNING FOR SUNSHINE AND FRESH AIR. By Alfred Hopkins, Architect. Architectural Book Publishing Company, New York. 238 pages. Price \$5.

Choice of design, aspects, materials, roof lines and distribution of rooms and windows are among the subjects discussed. The book contains numerous photographs, sketches and plans, and the author's experience is drawn upon to exemplify his advice. European styles are studied and among them the Cotswold and the Spanish are stressed.

CORRESPONDENCE

THE SECOND ARCHITECTURAL LEAGUE OF NEW YORK

Are there two leagues as indicated by the title? This letter is intended to provide the facts that will justify such a statement.

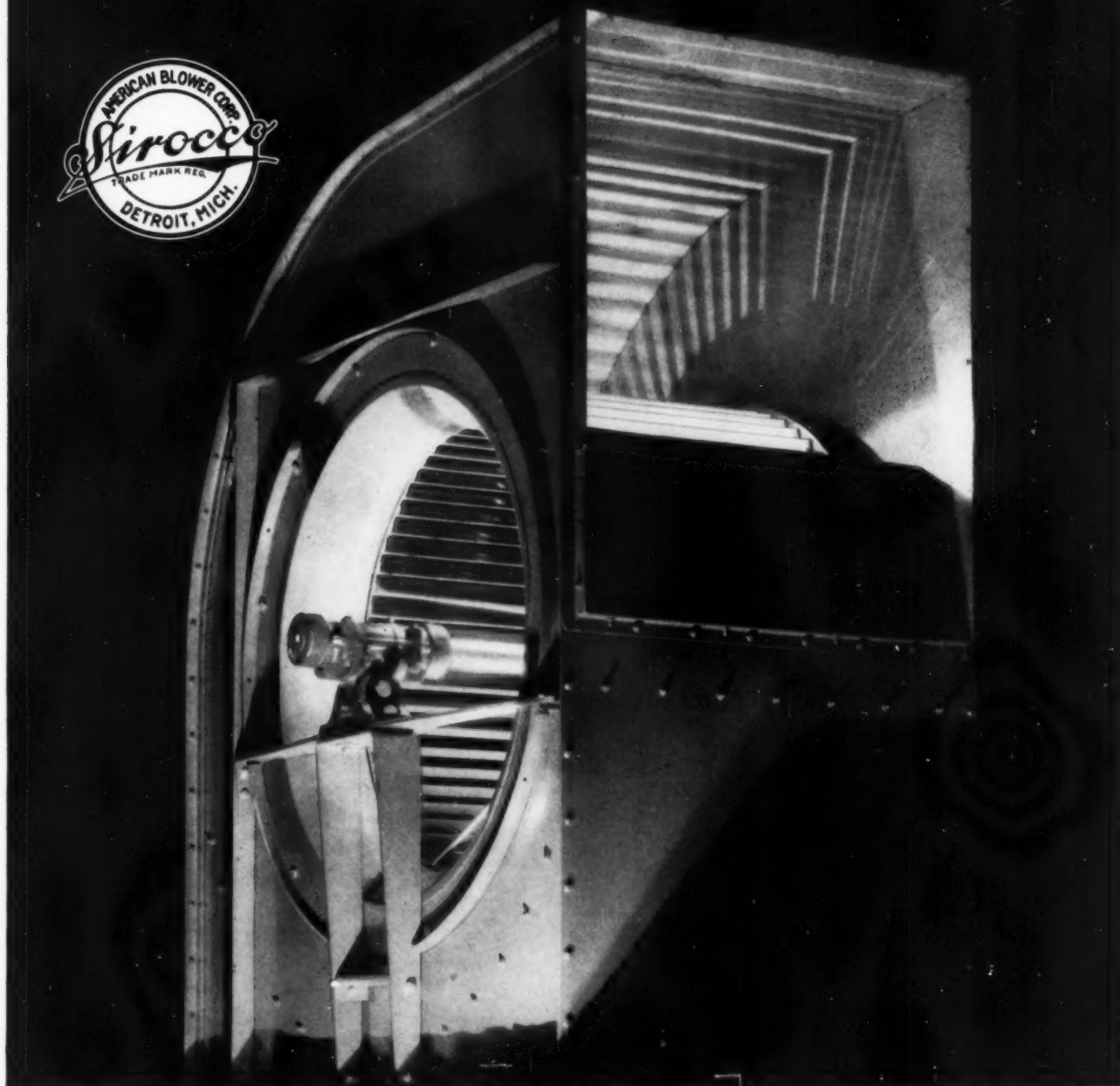
There was an Architectural Sketch Club in 1879 and 1880, but it lasted only a short time. A number of draftsmen were living at that time at 20 Irving Place. These young men—C. H. Blackall, Francis Bacon, Cass Gilbert and Clarence Johnson—organized the First Architectural League with D. W. Willard as President, February 18, 1881. J. Knox Taylor and Pierce P. Farber were also in the first organization; also W. Bates, C. H. Walker and John P. Riley—18 in all—afterwards growing to 26 or 28 members.

This was the first League. It was purely a society of draftsmen. They met twice a month and submitted competitive sketches judged by such men as McKim, Haight, Atwood, and others. They were an unusual lot of men. Many of them became very successful and well known. In fact that is why the League did not last: they became busy architects quickly.

The second League, that is, the present League, came into being through an entirely new set of men whose sole object at the start was to found a society to carry on a yearly exhibition of architectural drawings. These men at their own expense of money and time brought about such an exhibition in January, 1886, three years after the first League was dead. I hope I shall not be accused of personal egoism in relating the actual facts.

I had seen the architectural exhibitions in London and Paris and had been impressed by them.

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In 1885 I was writing for *Architecture and Building*. Through its pages the idea of an exhibition was suggested and stressed. Finally I went to see Professor William R. Ware, head of Columbia College School of Architecture. He warmly seconded the scheme and urged me to carry on. Through him I secured strong assent from R. M. Hunt, regarded then as the leading American architect. Then we got R. H. Robertson and F. C. Withers. These were men of standing. Professor Ware had suggested H. O. Avery and the committee was filled out with William B. Tuthill. I acted as Chairman, and Avery and Tuthill formed the hanging committee. We formed subcommittees: in Boston, Cabot, Cummings and Wheelwright; in Chicago, Cobb, Burnham and Root; and in Philadelphia, Windrin, Chandler and Linroot. All who were approached were hearty in response.

Then with Avery and Tuthill we went before the Salmagundi Society. They welcomed us at once and set aside four galleries in the American Art Galleries, located in Twenty-third Street near Broadway, where they were to hold their yearly show in January, 1886. The exhibition was a notable success. It attracted a great deal of attention and favorable comment. We had some fine drawings from several famous London architects, some fine drawings from Paris and our committees at Chicago, Philadelphia and Boston sent on a lot of interesting things. This is now known as the First Exhibition of the Architectural League. The men who brought about this exhibition were in fact the founders of the Second, and permanent, League and the entire matter had no relation whatever to the old League.

Our committee authorized Avery, Tuthill and myself to go ahead and formulate a scheme of organization to carry on the work. We began at once and approached such men as John Beverly Robinson, H. Langford Warren, John Du Fais, A. W. Brunner, Bruce Price, C. A. Rich, C. J. Berg, E. H. Clark, D. W. Willard and many others, including E. K. Rossiter, my partner at that time. Meetings and dinners at the Studio, a chop house in Sixth Avenue, brought together the men who organized the Second League. Among them were a few of the First League. What better name could we have than Architectural League? There was no objection. In fact the name was suggested by these men as apt and appropriate. And so it was done.

Turning now to the year book of the League for 1932 we find it stated: "Founded in 1880." But in 1880 there was no League. The book then traces its development on the assumption that it was an actual and natural growth of the League of 1881.

One will very likely ask why these facts, all of which can be proven by documentary evidence, should be unknown to the present generation of members. The answer is carelessness and advancing age. The League went through a period of storm and stress once. It became strong. Very few of the early men are now alive. Why pursue a contentious attitude? Let well enough alone.

F. A. WRIGHT.